

NEW HAMPSHIRE RIVERS MANAGEMENT AND PROTECTION PROGRAM
ASHUELOT RIVER NOMINATION

Submitted
July 6, 1992
by

The Ashuelot River Nominating Committee

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New Hampshire Rivers Management and Protection Program
River Nomination Form

July 6, 1992

Instructions: Before beginning any work on a river nomination, sponsors should contact the State rivers Coordinator in the NH Department of Environmental Services (DES). The Coordinator can provide initial guidance by identifying local and regional contacts and other sources of information and can give advice throughout the preparation of a river nomination. A publication, "A Guide to River Nominations," is also available from the Rivers Coordinator. This Guide includes a step-by-step explanation of the nomination process and a directory of federal, state, regional, and private sources of information and technical assistance. The River Coordinator's address and telephone number are: DES Rivers Coordinator, P.O. Box 95, 6 Hazen Drive, Concord, NH 03301, (603) 271-3503.

I. NOMINATION INFORMATION

1. Name of River: Ashuelot River

2. River/River Segment Location and Length (miles):
Located in southwestern NH, the Ashuelot River beginning at the dam at Butterfield Pond in Washington, to its confluence with the Connecticut River in Hinsdale. Total river miles is 64.

3. (a) Sponsoring Organization or Individual: Ashuelot River Nominating Committee

Co-sponsor: Harris Center for Conservation Education

Contact Person: Sharon Francis

Address: Harris Center for Conservation Education, RR 1 Box 733, Hancock, NH 03449

Phone number: 525-3394, or 826-5865

Additional contact: Barbara Skuly, Nomination form editor, 19 Spring St., W. Swanzey, NH, 03469, phone 352-0987

II. SUMMARY: RESOURCES OF STATEWIDE OR LOCAL SIGNIFICANCE

Explanation: In order to be eligible for destination to the NH Rivers Management and Protection Program, a river must contain or represent either a significant statewide or local example of a natural, managed, cultural, or recreation resource.

Instructions:

1. By checking the appropriate boxes below, indicate the resource values that you believe are present in the nominated river and whether you believe these values are present at a level of significance that is statewide or local. If the value is not present, leave the box blank.

	Value Present/ Statewide Significance	Value Present/ Local Significance
Natural Resource		
Geologic Resource	()	(X)
Wildlife Resources	(X)	()
Vegetation/Natural Communities	(X)	()
Fish Resources	(X)	()
Water Quality	()	(X)
Open Space	()	(X)
Natural Flow Characteristics	()	(X)
Scenic Resources	(X)	()
Managed Resources		
Impoundments		(X)
Water Withdrawals/Discharges	()	(X)
Hydroelectric Resources	X)	()
Cultural Resources		
Historical/Archaeological Resources	(X)	
Community River Resources	()	(X)
Recreational Resources		
Fishery Resources	(X)	()
Boating Resources	(X)	()
Other Recreational Resources	()	(X)
Public Access	()	(X)

2. Briefly describe the most important resource values which are present in the nominated river and why you believe these values are significant from either a statewide or local perspective. For example, if the river contains a segment of whitewater that

attracts kayakers from throughout the state and is identified in a regional boater's guide as a premier whitewater boating segment, you should identify recreational boating as a significant statewide resource and include one or two sentences in support of this statement. In addition, if you feel that a resource value is threatened, explain why.

The Ashuelot River represents an excellent blend of natural environment, human settlement and enterprise, social and natural history, solitude, recreation, beauty, and adventure. Historically an economic resource, it continues to provide hydroelectric power and volumes of clean sand and gravel. Minerals once mined in the valley continue to be sought by rockhounds who visit the abandoned mines of the region. Industries and communities utilize the River's water to aid manufacturing and treat wastewater. Still others rely on the choice aquifers within the corridor for their drinking water.

Recreational opportunities are plentiful. The River provides fishing, boating, swimming, bicycling, hiking, birding, wildlife observation, skiing, ice skating, and snowmobiling. Boating enthusiasts from beyond the State are drawn to the bouldery swift waters to enjoy the challenges that the rapids offer. The Ashuelot River is extolled in the AMC New England Canoeing Guide as a "beautiful tributary to the Connecticut", and offers Class II-Class IV and V rapids in high water. "The Upper Ashuelot Canoe Race" in spring attracts participants from outside the state to compete in this US Canoe Association sanctioned race executed on a flat water course. The scenic beauty of the River's course invites people to both the instream and River corridor uses.

While providing for the needs of our human community, the Ashuelot River supports the needs of the natural community. Home to the dwarf wedge mussel, the Ashuelot is one of only seven refuges for this federal endangered species. This portion of the Ashuelot's waters brings together the U.S. Fish and Wildlife Service, the Nature Conservancy and local groups in efforts to protect the mussel and alleviate impacts detrimental to its survival.

Abundantly natural, the River corridor provides habitat for a diversity of large and small furbearing mammals, birds, reptiles, and amphibians. The general north-south direction of the River guides migrating birds. The State threatened loon nests on Butterfield Pond, and heron rookeries existing within and adjacent to the corridor are supported by the Ashuelot River. Bald eagles and peregrine falcons (both endangered species) utilize the open waters at the confluence with the Connecticut. The corridor also contains numerous State threatened herbaceous species, and two exemplary natural communities identified by the NH Natural Heritage Inventory.

The residents of the populated areas rely on the ambience of the River to provide a solace from the business of their daily lives. Parks, open space, and protected lands are valued and

utilized by the residents of the river communities, and visitors seek the scenic beauty of the River corridor. The river roads combine the views of the River with the natural hillsides, fields, wetlands, and historical features of the communities.

Remnants of a more prolific manufacturing era are visible in the dams and mill buildings located in the village communities. Historic markers guide the tourist, and fine examples of architecture throughout the River communities convey the artistry of earlier years. The bridges that grace the River represent exquisite examples of stone construction, lattice truss covered bridges, and steel truss designs. The River corridor is abundant with archaeological sites dating from the Paleo-Indian era 10,500 years ago to 1640 A.D. Natural history is retold in the geologic features and the nearby virgin forest.

The Ashuelot River is not without its problems however. The Ashuelot River Nominating Committee keeps a watchful eye on the activities of the U.S. Army Corps of Engineers. Proposed projects such as the Hammond Hollow Dam or the increased storage in Otter Brook Reservoir cause alert in the River valley. These projects for flood control and providing adequate drinking water for Boston, ultimately affect flooding and storage capacities within the Ashuelot River watershed.

Flood management and storage capability is a concern to the residents of the Keene area which is a basin formed by the glacial Lake Ashuelot. Managing development to protect the wetlands and floodplains of the City is a prominent consideration in future planning.

Public access points to the River could be increased to improve the ease of instream use. Currently, many access points are based on historical use and on private property. A goal would be to obtain and develop good sites for easy entry to the River and with adequate parking. Utilizing the former railroad beds through the River corridor for hiking/bicycling trails would also improve accessibility and enjoyment of the River.

Though all of the Ashuelot River is Class B water quality, many remember years ago when ice floes ran red and blue, and more recently when the lower reach was Class C. Improvements in wastewater treatment and federal legislation have cleaned the River significantly, but remnants of the abuse still remain. On occasion the EPA guideline for fecal coliforms is violated in reaches south of Keene. Community officials attempt to identify and remove the source of contamination when this occurs. Fishermen still hesitate to eat the fish caught between Keene and Hinsdale, fearful of possible accumulated pollutants. The empty buildings of AC Lawrence leave Winchester residents concerned that contaminants may be in the soil and leach into the groundwater and the River.

The numbers of the dwarf wedge mussel are found to be declining. Sensitive to pollution, sedimentation, and development, the dwarf wedge needs protection of its habitat. It is hoped that monitoring efforts and careful use of this part of the River corridor will prevent further decline.

The Ashuelot River is a river well utilized and highly valued by those in the watershed, and it holds a bounty of outstanding features. Many benefit from the gifts it offers and recognize the River as an important asset not only to the region, but to the State. It is a River worthy of protection and respect.

III. COMMUNITY AND PUBLIC SUPPORT

Explanation: The level of community and other public support which is demonstrated for a river nomination will be an important factor in determining whether that river will be recommended for legislative designation. Such support may be shown by the adoption of a town resolution, a letter from selectmen, master plan excerpts, or documented support from other groups, either public or private (if private, explain the group's purpose and who is represented).

Instructions: Describe the type of community and other public support which exists for the river nomination and attach appropriate documentation.

In June 1991, a group of local citizens met with the State Rivers Coordinator and made the decision to pursue nomination of the entire Ashuelot River for protection under the NH Rivers Management and Protection Program. Introduction to the program was sent to planning boards and conservation commissions in each town along the River, and discussions were held with boards of selectmen. All towns were thus invited to participate in the nomination process. All but two (Lempster and Sullivan) of the ten River towns participated through active working groups. Formed as the Ashuelot River Nominating Committee, these groups met jointly at advertised monthly public meetings. Minutes of each meeting were sent to the River town boards. Local working groups met more frequently to accomplish the task of data collection and investigation. A total of 45 citizens participated in the work groups.

Three formal public meetings were held on the draft nomination throughout the watershed: Winchester on 6/30/92, Keene on 7/01/92, and Marlow on 7/02/92. Letters were written to planning boards, conservation commissions and selectmen inviting them to the meetings, notices were placed in the local papers, and announcements were posted throughout the watershed.

The meetings were attended by 15 citizens in Winchester, 22 in Keene and 10 in Marlow. At each public meeting the Rivers Program was explained by the State Rivers Coordinator. The Ashuelot River Nominating Committee presented its findings and recommendations for classifications of specific River segments. The remainder of the meetings was devoted to questions and discussion of the nomination. The public reacted in favor of the draft nomination and expressed no opposition at the public

meetings. Questions concentrated mainly on the components expected outcomes of the River nomination.

In April 1992, riverfront property owners were surveyed using a questionnaire modeled on that suggested in the River Nomination Guidebook. Of the 946 questionnaires mailed, 160 were returned completed for a response rate of 17%. Results were tabulated as a project by a Thayer High School student, with assistance from Southwest Region Planning Commission, and the Ashuelot River Nominating Committee members. A copy of the questionnaire with tabulated results is included in Appendix A. A brief summary of the results follows.

The Ashuelot River is felt to contribute to the quality of life in their community by 93% of the respondents. Reasons given as to how were: scenic values (83%), boating (66%), wildlife and waterfowl habitat (60%), fishing (59%), wetland ecosystems (57%), open space (55%), free-flowing water (54%), swimming (45%), water supply (34%), and historical/cultural sites (31%), agriculture (16%). Other reasons listed less frequently were shoreline development, hydro power, hunting, and the Indian dam.

Of those responding, 44% use their riverfront property as their full time residence. Other uses listed by 23-28% were second or vacation home, recreation, and investment. Less frequent categories of use were also given (see tabulation). Scenery was stated in 43% of the responses as the most important reason the River played in the purchase of their property. Of the 23% who permit public access to the River across their property, litter (23%) and noise (14%) were two problems identified with allowing public use. Among other problems noted along the River were water pollution (43%), flooding (28%), and loss of fish habitat (25%).

The responses identifying characteristics of the corridor to be protected, reflect the values to the community. Scenic quality, water quality, wildlife and waterfowl habitat, open space, free-flowing water, fisheries habitat, and wetland ecosystems were considered very important in 59-70% of the responses. Swimming, boating, and fishing were rated very important by 36-41%. Conversely, commercial and industrial development opportunity was considered very unimportant by 49% and 51% respectively, with 22% rating it mid range or unimportant.

Opinion regarding hydroelectric opportunity and residential development opportunity was more widely spread, though not addressed by some of the respondents. Of the total questionnaire respondents, 38% considered hydroelectric opportunity as very unimportant, with 16% considering it very important. Middle ground was held by 21%, the remaining opinion split on either side of middle. Residential development was considered very unimportant by 28%, with a range of opinion closely scattered between 9-18% as very important to unimportant.

It was felt by 86% that local government should take action to protect the river in their community. 80% or better listed improving water quality, limiting industrial shore development, and protecting scenic areas and wildlife habitat as measures to protect the River and the opportunities it offers. 69-75% listed protecting fisheries habitat, limiting commercial shoreline development, and protecting the free-flow of water. Other opinions stated were 48% for limiting resident shore development, 24% for providing public access, and 20% for providing recreational facilities. Only 4% felt no additional protection measures should be taken.

Financial support for the nomination process was received from the following in the business community: Granite State Bank, J.A. Wright & Co., The Kingsbury Fund, PC Connection, The Putnam Foundation, and Schleicher & Schuell Inc.. Various private individuals also contributed donations.

IV. OTHER SUPPORTING INFORMATION

Explanation: In addition to the information provided on this nomination form, sponsors are encouraged to submit any other information which they believe will support the nomination of the river. This information may include a visual presentation (for example, a slide program or a map showing the location of significant resources) or studies and reports on the river.

Instructions: List what, if any, additional supporting information has been submitted with this river nomination.

Submitted are maps showing the land use and zoning of the 1/4 mile Ashuelot River corridor. These maps were created by Southwest Region Planning Commission from orthophotos, town zoning maps, and input from the Ashuelot River Nominating Committee. Various volunteers compiled a photo album and developed a slide program to accompany the nomination.

V. RIVER CLASSIFICATIONS

Explanation: Each river or river segment that is designated by the state legislature will be placed into a river classification system. This classification system consists of four categories: Natural, Rural, Rural Community, and Community Rivers. Refer to the DES publication "A Guide to River Nominations," for a complete description and explanation of the river classification system and the instream protection measures which have been adopted by the state legislature for each classification. In this part of the nomination form, DES and the State Rivers Management Advisory Committee are interested in learning which river classification(S) you believe is most appropriate for your river.

Instructions: For each classification criteria listed below (a-d), check the one box which most accurately describes the nominated river or segment.

(a) General Description

The river or segment is free-flowing and characterized by high quality natural and scenic resources. The river shoreline is in primarily natural vegetation and the river corridor is generally undeveloped and development, if any, is limited to forest management and scattered housing. (Natural Rivers)

The river or segment is adjacent to lands which are partially or predominantly used for agriculture, forest management, and dispersed or clustered residential housing. Some instream structures may exist, including low dams, diversion works, and other minor modifications. (Rural Rivers)

{ The river or segment flows through developed or populated areas of the state and possesses existing or potential community resource values such as those defined in official municipal plans or land use controls. The river corridor has mixed land uses. The river or river segment is readily accessible by road or railroad and may include impoundments or diversions. (Rural Community Rivers)

The river or segment flows through populated areas of the state and possesses actual or potential resource values, with some residential or other building developments near the shoreline. The river or river segment is readily accessible by road or railroad, and may include some impoundments or diversions. (Community Rivers)

(b) Length

The river or segment is at least 5 miles long. (Natural Rivers)

The river or segment is at least 3 miles long. (Rural Rivers)

{ } The river or segment is at least 3 miles long. (Rural Community Rivers)

The river or segment is at least 1 mile long. (Community Rivers)

(c) Water Quality

- { } Under the state's water quality standards, the actual water quality of the river or segment is Class A. (Natural Rivers)
- Under the state's water quality standards, the actual water quality of the river or segment is Class B. (Rural, Rural Community, and Community Rivers)
- { } Under the state's water quality standards, the actual water quality of the river or segment is less than Class B.

Distance to Roads

- {X} The minimum distance from the river shoreline to a paved road open to the public for motor vehicle use is at least 250 feet, except where a vegetative or other natural barrier exists which effectively screens the sight and sound of motor vehicles for a majority of the length of the river. (Natural Rivers)
- {X} There is no minimum distance from the river shoreline to an exiting road. Roads may parallel the river shoreline with regular bridge crossings and public access sites. (Rural, Rural Community, and Community Rivers)

2. Based on the boxes checked above, and your knowledge of the river or segment, identify those segments of the river which you believe should be classified as either a Natural, Rural, or Community River (for example: Natural River: headwaters to the Town of ABC town line; Rural River: Town of ABC town line to the state border). Although a river or segment may be given more than one classification, the number of differently classified segments should be kept to a minimum. If your recommendation is incompatible with any of the above-listed criteria for a particular river classification, and you believe the classification is nevertheless appropriate and justified, explain why.

A FROM THE DAM AT BUTTERFIELD POND TO AND INCLUDING THE FALLS ABOVE ASHUELOT POND.

FINDINGS:

1. The length of this segment is 5 miles
2. There is no evidence to indicate the water quality would be other than Class B or better.

3. This is the headwaters of the Ashuelot, draining from Butterfield Pond, part of the 9,000 acre Pillsbury State Park. Black Spruce/Balsam Fir forest predominates in this segment. A journey bushwacking along the River's course, revealed numerous signs of wildlife including bobcat and bear. This segment also contains a 3/4 mile marshy area frequented by ducks, moose and deer. Reptiles and amphibians are visibly abundant in this marsh. The land is forested throughout the remaining segment changing to mixed hardwood with occasional marshy areas.

4. The corridor is essentially wild and undeveloped except where Route 31 crosses the Ashuelot immediately after the dam at Butterfield Pond, and where Washington-Lempster Rd. crosses the Ashuelot about 3 miles downstream of the dam. On this road within the corridor are two houses, and the intersection with the road to Long Pond which follows the course of the Ashuelot for only 500 feet. An old mill site and diversion canal is located within the eastern river corridor. An old logging road crosses the Ashuelot about 2400 feet north of the Washington-Lempster Road. No other roads enter the corridor.

5. Codman Hill rises steeply on the eastern bank, with a 30 foot high section of ledge, probably broken from the Hill, forming an interesting rock spire adjacent to the River. Signs of raptors and owls were noted here, as well as of large fur-bearing mammals.

6. Loons, a State threatened species, have been recorded as nesting on Butterfield Pond for more than eight years. The State threatened Farwell's millfoil (Myriophyllum farwellii) is located in this segment.

7. Cascades and small waterfalls mark the watercourse. The flow of the River is unimpeded by any structures.

8. The intactness of the natural communities here in this segment and the abundance of diverse wildlife is outstanding for the Ashuelot River.

9. Zoning in Washington is "Residential/Agricultural" and requires a 50 foot setback from the shoreline, and a minimum of 200 feet of waterfront frontage. Lempster has no zoning.

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **NATURAL.**

B. FROM THE FALLS ABOVE ASHUELOT POND, TO SYMONDSVILLE ROAD IN MARLOW.

FINDINGS:

1. The length of this segment is 6.6 miles
2. Washington Pond Road with scattered housing, parallels the River south of Ashuelot Pond. Housing is located on the northeastern and southwestern shores of Ashuelot Pond.
3. There is no evidence to indicate the water quality would be other than Class B. Samples taken by Ashuelot River Watch at Ashuelot Pond in 1988 support Class B level.
4. There is a dam located at the mouth of Ashuelot Pond maintaining the water level in the pond. A beaver dam is located further downstream near Symonds ville Road.
5. Public access is available at Ashuelot Pond for swimming, boating, and fishing. Fishing is noteworthy in Ashuelot Pond and the narrower stretch above it, and is included in Delorme's publication, New Hampshire Fishing Maps.
6. The river corridor is largely forested throughout this river segment. Scenic vistas from Ashuelot Pond, and views of the River from the Washington Pond Road are examples of the natural landscape of this segment.
7. Zoning in Washington is "Residential/Agricultural" and requires a 50 foot setback from the shoreline, with a minimum of 200 feet frontage on waterfront. Marlow is zoned "Rural".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **RURAL**.

C. FROM SYMONDSVILLE ROAD IN MARLOW, TO THE DAM LOCATED AT VILLAGE POND AND OWNED BY AUDIO ACCESSORIES INC.

FINDINGS:

1. The length of this segment is 1.1 miles.
2. Ashuelot River Watch monitoring data from 1990 indicates this segment maintains Class B water quality. More recent data is not available. The River is used for swimming and fishing in this segment, especially in the Village Pond created by the dam.

3. This segment contains the Village of Marlow with residential, commercial, and recreational uses. It is a scenic spot with Marlow Hill in the background and the reflection of the Village in Village Pond.
4. The State threatened Bailey's sedge (Carex baileyi) is located in this segment.
5. Route 10 and the Washington Pond Road are in close proximity in this segment.
6. Jones Hall, on the National Register of Historic Places, is located in this segment. Historically the dam had been used to generate power in the 1800's.
7. Zoning in this segment is "Village".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **COMMUNITY**.

D. FROM BELOW THE AUDIO ACCESSORIES DAM IN MARLOW, UP TO THE BREACHED DAM OWNED BY JAMES BLACKSTOCK, LOCATED ABOVE THE VILLAGE OF GILSUM.

FINDINGS:

1. The length of this segment is 6.6 miles.
2. Ashuelot River Watch monitoring data from 1990 indicates this segment supports Class B level of water quality.
3. This segment includes a Northern New England Seepage Marsh noted by the NH Natural Heritage Inventory as an exemplary natural community. Also present is the State threatened Satin willow (Salix pellita).
4. Route 10 parallels this segment with scattered housing and sand pits along its way. The forested hillsides sit steeply within the corridors, providing scenic backdrop for the road traveller. The open marsh presents opportunities for viewing wildlife that benefit from the food and cover provided by the forests and marshes.
5. While providing economic value, the sandpits also provide opportunity to review geologic history along the River's edge.
6. A small hydroelectric dam creates power within this segment in Marlow. 1500 feet of the River's flow is at

times reduced here as the water is diverted through the turbines. There are four breached/ruined dams in this segment.

7. Marlow's "Wetland Conservation District" protects the wetlands in this segment, the remaining portion is zoned "Rural". In Gilsum, the land is zoned "Rural Residential".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **RURAL**.

E. FROM THE BREACHED DAM OWNED BY JAMES BLACKSTOCK TO ABOVE THE STONE ARCH BRIDGE IN GILSUM.

FINDINGS:

1. The length of this segment is 1.1 mile
2. The water quality as monitored by Ashuelot River Watch in 1990 supports Class B level.
3. The Upper and Lower Villages of Gilsum, separated by forested hillsides, are located in this reach. The Upper Village is more densely populated and acts as the town center.
4. It is in this segment where Gilsum hosts its Annual Rock Swap.
5. Route 10 closely follows the River, with the steep forested hillsides as backdrop. Two bridges also cross the River.
6. A woodturning shop is located at the site of the one breached dam located in this segment.
7. The zoning is "Village Residential" and "Rural Residential" in Gilsum, the zoning in the eastern corridor in Sullivan is "Rural".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **COMMUNITY**.

F. FROM THE STONE ARCH BRIDGE IN GILSUM TO THE COURT STREET BRIDGE IN KEENE.

FINDINGS:

1. The length of this segment is 14.5 miles.
2. Ashuelot River Watch monitoring data from 1990 indicates this segment supports Class B level. Drinking water is withdrawn from high potential aquifers located in this segment. Keene High School students also monitor a portion of this segment for water quality.
3. Refuge for the Dwarf Wedge Mussel, a State and Federal Endangered Species, is located within this segment. This location is one of seventeen existing in the United States. The Nature Conservancy, the US Fish and Wildlife Service, and Keene High School students are actively involved in monitoring impacts to this mussel and planning protection methods.
4. State threatened herbaceous species located here are: Woodland's hound's tongue (Hackelia virginiana), Reflexed sedge (Carex retroflexa), and River bank quillwort (Isoetes riparia). The Eastern pondmussel (Ligumia nasata), and the Blue-gray gnatcatcher (Polioptila caerulea) are also state threatened species found residing within the corridor.
5. The exemplary natural community, Southern New England Circumneutral Talus Forest/Woodland, recognized by the NH Natural Heritage Inventory is located within this segment.
6. River Road and Route 12A run closely along the River's course here, providing easy river access. They also provide for a scenic drive or bicycle ride with the River in view. Though River Road is largely within 250 feet of the River, the atmosphere is predominately natural. The backdrop remains forested hillsides throughout the road's path, and a sense of quietude is maintained. This stretch is part of the bicycle tour recommended by Bernotas in the book 30 Bicycle Tours in New Hampshire (1991).
7. Scattered housing alternates with forested hillsides, and agricultural fields become more evident in the Surry end. The Village of Surry is adjacent to the western corridor.
8. The Gilsum Stone Arch Bridge and Gorge are scenic river attractions, with pot holes, kettle holes, sandpits, old mines, and Vessel Rock among the geologic enticements.

9. The US Army Corps of Engineers' Surry Mountain Dam is located in this segment. Built and maintained for flood control, it provides recreational and scenic access to the River, as well as maintaining a large area for wildlife habitat.

10. This segment holds a variety of recreational opportunities. The River is stocked with rainbow and brown trout by NH Fish & Game, and is well utilized by fishermen. The rapids, recommended in the AMC New England Canoeing Guide (1971), are enjoyed every spring by canoers and kayakers. Surry Mountain Reservoir provides formal river access, hiking trails, a swimming beach, and picnicking. Bicyclists use the roadways for scenic bike tours. Hunting is permitted at Surry Mountain. Golfing is enjoyed at Bretwood Golf Course which provides open space along the River's course.

11. Wildlife abounds in the natural settings that predominate the landscape here. The variety of forests and fields, wetlands and shrubs, provide the mixed habitat attractive to a diversity of fur-bearing mammals and birds.

12. Scenic vistas are plentiful with backgrounds created by mountains such as Surry Mountain, and valleys such as Hammond Hollow in Gilsum. More intimate settings are found in places such as the park at the Stone Arch Bridge in Keene, or a quiet spot along River Rd. in Gilsum or Surry.

13. Zoning in Gilsum is "Rural Residential". All of the Surry segment is considered a "General" zone, with a large portion at Surry Mountain Reservoir controlled by the US Army Corps of Engineers.

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **RURAL**.

G. FROM COURT ST. BRIDGE IN KEENE TO THE BRANCH (RIVER).

FINDINGS:

1. The length of this segment is 4 miles.

2. Generally, this segment supports Class B level of water quality, however, violations have been known to occur. Monitoring efforts and remedial action have corrected problems when they were discovered. The City of Keene, the state of NH, Ashuelot River Watch, and Keene High School students have participated in monitoring this segment of the River.

3. This segment through Keene is the most heavily populated area along the river, with a mix of residential, commercial and industrial uses within the River corridor. The banks are vegetated mostly with trees and shrubs, and parks are interspersed within the populated districts.

4. The State threatened species the Common Nighthawk (Chordeiles minor) is located in this segment.

5. Because of its high population, the open areas are well utilized for recreational activities such as boating, hiking, picnicking, bicycling, and nature study.

6. A concentration of historical features are located within the city of Keene, one of the earlier towns to be incorporated.

7. The River is the focus for community activities such as art displays, fundraising events, and canoe races.

8. Extensive wetlands run adjacent to the river corridor, providing habitat for wildlife, unique vegetative communities, and flood storage. The State threatened Incurved umbrella sedge (Cyperus aristatus) is located within this segment.

9. The broad river valley with steep valley walls tells of the geologic past here, when the area was flooded by the glacial Lake Ashuelot. Today the Keene floodplain and wetlands are now recognized and valued for their flood storage ability.

10. Keene's Open Space Master Plan states goals to discourage further development within the floodplain, and to establish additional wildlife and recreational corridors and scenic buffers along rivers and streams.

11. Zoning is varied as the River flows through Keene. The zones include: "Agricultural", "Rural", "High" and "Low Density", "Commercial", and "Conservation". A large segment of the River runs through Ashuelot River Park which is zoned "Conservation".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **COMMUNITY**.

H. FROM THE BRANCH IN KEENE TO THE UNNAMED BROOK ENTERING ON THE WEST BANK NEAR THE INTERSECTION OF WINCHESTER STREET AND ROUTE 10 IN WEST SWANZEY.

FINDINGS:

1. The length of this segment is 6.1 miles
2. The water quality is Class B with occasional high coliform counts near the Sawyers Crossing Bridge. The Keene WWTF is located in this segment which is monitored by the State of NH, Ashuelot River Watch, and the City of Keene.
3. A high potential aquifer bordered by a medium potential aquifer is located from the confluence with the South Branch into West SwanzeY.
4. The flow of the River is unobstructed in this segment.
5. The banks of this section retain their natural vegetation, with wetlands interspersed along the River's course. The State threatened blue-gray gnatcatcher has been identified as nesting in this area, and waterfowl utilize the wetlands and backwaters for nesting and feeding. The State threatened Sprout muhlenbergia (Muhlenbergia sobolifera), and Long-fruited anemone (Anemone cylindrica) are located in this segment.
6. Open space is maintained in much of the land here by conservation lands, agricultural fields, extensive wetlands, and the Yale Forest.
7. The two bridges crossing this segment are historic. One of the Ashuelot's four covered bridges is located at Sawyers Crossing (on the National Register of Historic Places), and a steel truss railroad bridge is located further downstream.
8. There are three small lengths of road that briefly come within 250 feet of the River's course, but they are screened well by vegetation and not visible from the River. The abandoned railroad bed runs in and out of the River corridor providing for hiking, skiing and snowmobiling activities.
9. Historically, this segment holds a number of noteworthy archaeological sites dating from the Late Woodland period to the Paleo-Indian times, 10,500 years ago. It has been the location of successful organized digs, and contains the now underwater fishing weir of the Squakheag Indians.
10. This portion of the River provides flat water boating opportunities spring through the fall, with informal access

points throughout the corridor. It is the major portion of the course for the annual Upper Ashuelot River Canoe Race.

11. Because of its largely undisturbed banks and open space, this segment provides many scenic vistas from the River and from the roads looking toward the River.

12. This segment of the river is zoned "Agricultural" and "Rural" in Keene, with a small portion "Commercial/Industrial". In Swanzey it is largely "Residential" and "Rural/Agricultural", with a small segment adjacent to Route 10 zoned "Business".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **RURAL**.

I. FROM THE UNNAMED BROOK ON THE WEST BANK NEAR THE INTERSECTION OF WINCHESTER STREET AND ROUTE 10 IN WEST SWANZEY, TO THE DENMAN THOMPSON BRIDGE.

FINDINGS:

1. The length of this segment is 1 miles.

2. The water quality is Class B with occasional high coliform counts at the beginning of the segment. This segment is monitored by the State of NH, the Keene WWTF, and Ashuelot River Watch. Most of the housing in this segment is connected to the Swanzey WWTF, with plans to extend a portion of the sewer main this summer.

3. There is one dam in this segment located and owned by the Homestead Woolen Mill. The River is freeflowing over this dam which is not currently used for power.

4. Though roads run parallel to the River, only in the very center of the Village does the river come within 250 feet. Two bridges cross the River, one being the West Swanzey Covered Bridge (on the National Register of Historic Places), the second being the new concrete Denman Thompson Bridge. Both bridges provide scenic vistas of the River with the hillsides behind it, and opportunities to view the waterfowl and mammals that reside here.

5. One of the most popular River access points is located immediately upstream of the West Swanzey Covered Bridge, and is used as the finishing line for the annual Upper Ashuelot River Canoe Race. The fast shallow water below the dam is used for the annual Canoe Poling Clinic.

6. Historically this has been a village center since the early days of Swanzey's history: the location of homes, businesses and mills. It retains that characteristic today with dense housing, small businesses, and a village green. It is partly zoned "Village Business District" and partly "Residential".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **COMMUNITY**.

J. FROM THE DENMAN THOMPSON BRIDGE IN WEST SWANZEY, TO AND INCLUDING THE OXBOW ON THE WEST BANK BEFORE AC LAWRENCE BUILDING IN WINCHESTER.

FINDINGS:

1. The length of this segment is 9.3 miles
2. The water quality is maintaining its Class B level and is monitored by the State of NH and Ashuelot River Watch. The Swanzey WWTF is located in this segment.
3. Two high potential aquifers with adjacent medium potential aquifers are located within this segment of the corridor.
4. The banks of the River are naturally vegetated and include many miles of open space provided by agricultural fields, wetlands, and forest. The predominate land use is fields and forest with scattered housing except for the small village of Westport which is more dense. There are a few commercial establishments located within the corridor.
5. The wetland areas within this segment are noted for their attraction for waterfowl. The farms attract wild turkeys.
6. The State endangered Wild sensitive senna (Cassia nictitans) is located in this segment.
7. The Slate Covered Bridge in Westport and the Coombs Covered Bridge in Winchester (both on the National Register of Historic Places) cross the River in this segment. Bridge abutments remain intact at the former Melvin Covered Bridge in Winchester that burned down in the 1950's.
8. Located in this segment are at least two archaeological sites dating to the Woodland and Middle Archaic periods.

9. This segment of the River is freeflowing and provides flat water boating opportunities spring through fall. Hiking and bicycling are frequent recreational uses of the corridor. The oxbow behind AC Lawrence is frequented by fishermen.

10. The width of the river valley provides scenic vistas from within the corridor. Farm fields on the valley floor are bordered by forested hillsides.

11. Zoning is "Business" in the River's west corridor in Swanzey, and half "Residential" and "Rural/Agricultural" in its east corridor. In Winchester the zoning is largely "Agricultural" with "Residential" just above the oxbow.

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **RURAL**.

K. FROM THE OXBOW ON THE WEST BANK BEFORE AC LAWRENCE BUILDING IN WINCHESTER, TO THE ROUTE 119 BRIDGE.

FINDINGS:

1. The length of this segment is 1.2 miles.

2. The water quality is Class B and is monitored by the Ashuelot River Watch and the State of NH. The Winchester WWTF is located here. Within this segment is also the former tannery, AC Lawrence Company. Though the buildings sit empty, the location remains a water quality concern of the Winchester Conservation Commission. It is felt toxics from the company's operations may be in the soils and act as a potential pollution source.

3. The active Village of Winchester is built upon the banks of the River here. The land use is highly residential with a commercial/industrial mix. Open space and recreational opportunities are provided by the ELM Community Center in the center of town.

4. There is one dam located within the Village of Winchester. The River runs freely here and the dam is no longer used for any power.

5. The Town Hall, Conant Public Library and the NH Conservancy of Music and Arts (now the United Church of Winchester), located in the Village center are listed on the National Register of Historic Places.

6. The historic Elm Street Steel Truss Bridge crosses the River in the Village. Fishermen can be seen fishing from this bridge.

7. Mirey Brook and its adjacent wetland enters the River corridor near the end of this segment.

8. Zoning along the River in this segment is "Commercial" bordered on both sides by "Residential".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as COMMUNITY.

L. FROM THE ROUTE 119 BRIDGE IN WINCHESTER TO THE DAM OWNED BY G.E. ROBERTSON AND COMPANY IN HINSDALE.

FINDINGS:

1. The length of this segment is 5 miles.

2. The water quality is Class B though in previous years this portion of the River was classified Class C. It is monitored by the Ashuelot River Watch and the State of NH, and has had Class B violations in the past. However, the village of Ashuelot has recently been connected to the Winchester WWTF, and it is believed the quality of this segment will be maintained at Class B. Also there are two paper company who withdraw water from the Ashuelot and discharge their now treated effluent into the River.

3. A high potential aquifer, bordered by a medium potential aquifer, is located at the beginning of this segment.

4. The River valley opens and then narrows in this segment, and is bordered by forested hills. The larger flat areas that exist are cultivated fields. Housing is scattered along the course. A large backwater and wetland fed by Snow Brook enters in the eastern corridor at the beginning of the segment.

5. The State endangered Spiked needlegrass (Aristida longespica var. geniculata) is located in this segment.

6. The Village of Ashuelot contains more densely settled housing mixed with commercial uses. The development is mainly along Route 119 with the natural landscape in the background.

7. There are two breached/ruined dams in this segment, and two hydroelectric dams. Both of these dams have a

generating capacity less than 5 megawatts and are exempt from FERC licensing.

8. The Ashuelot Covered Bridge (on the National Register of Historic Places) is located in the Village of Ashuelot and offers views of the River from its sidewalk and from the parkbench located in the small grassy area adjacent to the bridge.

9. The proximity of the roads to the river provides boat access and opportunity for scenic bicycle and walking tours. This segment is included in Bernotas's book 30 Bicycle Tours in New Hampshire (1991).

10. The River's course becomes steeper in this segment and is the location of well-acclaimed whitewater canoeing/kayaking in the spring. It is recommended in the AMC New England Canoeing Guide (1971).

11. Pisgah State Park dips into the northern river corridor with a trailhead at Broad Brook. This enables access to 13,400 acres of woodland (including virgin forest), streams, wetlands, historic sites, and habitat for a diversity of wildlife.

12. Zoning to the Ashuelot Covered Bridge is "Residential" with some "Agricultural". In the Village of Ashuelot, the zoning alternates between "Commercial" and "Rural Residential". Near Pisgah Park the zoning turns "Agricultural".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **RURAL**.

M. FROM THE DAM OWNED BY G.E. ROBERTSON AND COMPANY IN HINSDALE TO THE ROUTE 63 BRIDGE.

FINDINGS:

1. The length of this segment is 1 mile.

2. This segment was once classified Class C, but is now Class B, and is monitored by the Ashuelot River Watch and the State of NH. The village of Ashuelot (located in the previous upstream segment) has recently been connected to the Winchester WWTF, with an expected improvement in water quality. Hinsdale has its own WWTF. Due to these technological advances, it is believed this segment will maintain this new classification.

3. The Town of Hinsdale withdraws drinking water from an aquifer located in the southern corridor.
4. The G.E. Robertson dam is connected to a diversion canal that once fed water to several old mills in the town of Hinsdale. Today the water from the diversion canal is used to power the generator of one paper company. The Fiske Hydro Inc. dam is also located and operating within this segment.
5. The densely settled Town of Hinsdale is located in this segment, with a mix of residential, commercial and industrial uses. Route 119 runs parallel to the River, with the village in the northern corridor visible from the River. The forested hillsides provide backdrop to the village, and the southern corridor is dominated by forest.
6. History abounds in this small community, a thriving manufacturing center in the 1800's. Todd House is listed on the National Register of Historic Places, and the oldest continuously operated Post Office in the US is located in Hinsdale. A NH Historical Marker notes the location of the former Holman and Merriman Machine Shop of the late 1800's. These are a few of the historic sites located in Hinsdale.
7. Zoning in Hinsdale largely "Rural/Agricultural". The northern corridor in town is "Residential" with a small "Commercial" zone in the village.

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **COMMUNITY**.

N. FROM THE ROUTE 63 BRIDGE IN HINSDALE TO THE MOUTH OF THE ASHUELOT AT THE CONNECTICUT RIVER.

FINDINGS:

1. The length of this segment is 1.5 miles. Though this is less than the required 3 miles, the Ashuelot River Nominating Committee feels the outstanding natural features of this segment warrant its nomination of rural.
2. The water quality is Class B and is monitored by the Ashuelot River Watch and the State of NH. Once classified Class C, the water quality has improved with the operation of the Hinsdale WWTF in this reach.
3. Nature study is a prime activity in this segment at the mouth of the Ashuelot, and picnicking and more formal

recreational activities such as tennis and ballplaying are available at Heritage Park.

4. This segment of the River represents the approach of the Ashuelot River towards its confluence with the Connecticut River. Scattered housing dots the corridor, with occasional commercial uses. The backdrop continues to be forested hillsides bordering the broadening floodplain that remains agricultural fields.

5. The juncture of the Ashuelot and the Connecticut River provides for open water throughout the year. Because of this, waterfowl and raptors are attracted to the food available, and congregate in large numbers during the winter. Bald eagles and peregrine falcons are included in this opportunistic group and can occasionally be observed feeding here. The nearby hillsides provide cover and habitat for larger furbearing mammals such as black bear, bobcat and deer.

6. Five State threatened herbaceous species are located in this segment: Three-leaved black snakeroot (Sanicula trifoliata), Burgrass (Cenchrus longispinus), Marsh horsetail (Equisetum palustre), Flatstem pondweed (Potamogeton zosteriformis), and Knotty pondweed (Potamogeton nodosus).

7. This stretch of River near the railroad trestle and at the mouth are favorite fishing spots by local fishermen. The highly prized game fish of walleye, small mouth bass, and large mouth bass can be caught here, as well as bullheads, yellow perch, and white perch.

8. Fort Hill, an old Squakheag Indian fort located within the northern river corridor, is valued as an archaeological site containing artifacts dating to 1640 A.D.

9. The Connecticut River is classified "Rural" under the New Hampshire Rivers Management and Protection Program. Classification of this segment of the Ashuelot as "Rural" is synchronous with the recent designation of the Connecticut.

10. This segment in Hinsdale is zoned "Rural/Agricultural".

CLASSIFICATION: Based on these findings, the Ashuelot River Nominating Committee nominates this segment of the River as **RURAL**.

VI RESOURCE ASSESSMENT

Map

A map of the river must be appended to this resource assessment. This map should be taken from a US Geological Survey quadrangle (scale 1:24,000) and should include an inset or locator map showing the location of the river within the state.

Two maps accompany this resource assessment. Both are based on US Geological Survey quadrangles. One map (scale 1: 25,000) shows zoning and river corridor features, the second (scale 1:24,000) shows land use. Locator and watershed maps are included in Appendix B.

1. Natural Resources

(a) Geologic Resources

Briefly describe the significant geologic resources of the river and river corridor, including any unique or visually interesting features such as waterfalls, unusual rock formations, and areas of rapids. Indicate if the state geologist or a recognized national or state resource assessment has identified these geologic resources as significant at a national, regional (New England), state, or local level.

The Ashuelot River begins at Butterfield Pond in Pillsbury State Park in Washington NH, at an elevation of 1,600 feet. From here it flows 30 miles over its bouldery course to Surry Mountain reservoir, for a fall of 1100 feet, and an average slope of 37 feet per mile. Through this course the first half of the River's rapids occur, at one point passing 1,200 linear feet through a steep (60-80 feet) gorge in Gilsum. This beautiful gorge contains a number of waterfalls. About 100 yards below the Arch bridge, which marks the location of the gorge, there is a notch on the north side known as the Devils Chair created by the wearing away of a pot hole. Pot holes exist at the mouth of the gorge just above the former gauging station, and for approximately 1/3 mile through the gorge, "half" pot holes can be seen. These were created as the River cut its way to the present river bed, wearing down what were once "full" pot holes.

From the Gilsum Gorge the River continues for 4 miles of rapids with a spectacular drop at Shaws Corner. The rapids become more gentle until the River approaches the mile long reservoir of Surry Dam. After Surry Dam, the slope of the River decreases as it approaches the broad flood plain of Keene. Continuing 8.6 miles downstream to the West Swanzey Dam, the River falls 6 feet for an average slope of 0.8 feet per mile. Here the River bottom is sandy as the water moves quietly through this reach. After the West Swanzey Dam, the River begins to pick

up with a few rapids located in Westport, then returns to placid water into Winchester. In Winchester, the River takes a turn west and then begins to drop quickly, falling 240 feet in its last 6 miles, the rapids recur, and boulders cover the river bottom. The River races towards its confluence with the Connecticut River in Hinsdale, the last mile widening and slowing in its course.

Bedrock Geology

The geologic history of the Ashuelot River Valley is not unlike much of New Hampshire in that it records a similar series of dynamic events in the earth's evolution. During two different intervals mineral grains were deposited in shallow seas that flooded this land. Between the periods of flooding the deposits were subjected to erosion, pressure, folding, uplift, and volcanic activity to form the rock that underlies the valley today. The present landscape was revealed by the retreat of the great ice sheet some 15,000 years ago, and further eroded by the streams of the Ashuelot River watershed. Travelling down the valley from the headwaters provides a view of this known geologic history that began some 460 million years ago.

Located in Washington on Route 31, 600 feet south of the bridge over the Ashuelot, are outcrops of banded gneiss of feldspar and quartz alternating with layers of biotite and garnet. These outcrops represent the sandy muds deposited by earlier flooding, and then later transformed by high temperature and pressure (metamorphism). They formed some 330 million years ago as the May Pond unit of the Littleton formation, the underlying rock east of the Ashuelot's course.

Also part of the Littleton formation are the mica schists and impure quartzites of Marlow Hill. This hill, having survived the erosion of the glacier, provides views of the sediments transformed from limy muds to massive white rock with small grains of green diopside and actinolite. Additionally, quartz conglomerates are well exposed, representing the transformed gravels and large pebbles of quartz deposited by early stream activity.

Travelling south, the prominent cliffs of Beech Hill in the eastern edge of Keene are composed of white Clough quartzites created from sediments deposited some 355 million years ago. Because of its resistance, this metamorphosed rock generally stands out in bold, conspicuous outcrops. Other resistant rocks that stand in prominence today are the granites of Surry Mountain, and Gardiner and Franklin Mountains in Winchester.

On the western crest of Surry Mountain is a well exposed example of Ammonoosuc volcanics. These hardened rocks were spewed from volcanoes as molten lava and rocks, and now are composed of light-colored biotite gneiss and black amphibolite. Another outcrop of Ammonoosuc volcanics is located on Depot Road in Hinsdale, 0.2 miles south of the power lines over Cannon Hill.

In a later time, some 300 million years ago, molten rock also intruded previously metamorphosed rocks to create sills and

dikes. The oldest intrusions from this period are evident as amphibolite located in Franklin, Rattlesnake, and Gardiner Mountains south of the village of Westport. These hillsides are all in view from within the river corridor. In the northern portion of the river valley, masses of Kinsman quartz monzonite intruded to form a tabular body parallel to the River from May Pond to Mill Pond in Marlow.

In other instances, residual watery solutions left from cooling magma were forced into fractures in the pre-existing rock to form pegmatites. Mined throughout the Ashuelot River valley, these pegmatites consist of coarse-grained tabular bodies of quartz, feldspar, mica, beryl, tourmaline, or apatite. In the 1950's New Hampshire took a lead as an U.S. mineral producer because of this mining. Many of these mines are still located within the river corridor in Gilsum and continue to be visited by mineral seekers today.

Surficial Geology

As one approaches Gilsum, the vestiges of a glacial lake appear. Due to the westward course of the Ashuelot valley from east of Gilsum to near Surry, and earlier ice recession to the east then to the west, a series of lakes were dammed by ice west of Gilsum.¹ On the west bank of the River at the north end of the Gilsum Arch Bridge, and on the east bank above the road leading to the center of Gilsum, laminated silt and clay layers are present. Known as varved clays, these layers can be counted to record the number of yearly cycles of deposition in the glacial lake.

The largest glacial lake in this region was located in what is now the broadest section of the Ashuelot River Valley. Known as Lake Ashuelot², it was formed by the damming of glacial ice and debris at its southern end, and covered the valley from south of Keene to north of Surry. Thick sedimentary deposits underlie the valley floor here and lakeshore features and terraces mark the valley sides. In the past, varved clays that recorded at least 200 years of accumulation had been quarried in Keene for brickmaking.

A large delta, once extending from the north end of Surry Mountain to south of Surry, was the product of river drainage into Lake Ashuelot. Worn by erosion, the now dissected delta provides an economic resource of volumes of sand and gravel. Other deposits of sand and gravel from glacial meltwater have created deltas throughout the river valley and can be seen in

¹Jack C. Ridge, "The Quaternary Geology of the Upper Ashuelot River, Lower Cold River, and Warren Brook Valleys of Southwestern New Hampshire." In Guidebook for Field Trips in Southwestern New Hampshire, Southeastern Vermont, and Northcentral Massachusetts, ed. Wallace A. Bothner (Durham, 1988), p. 187.

²Ridge, p.189.

Marlow, Gilsum, Keene, Swanzey, and Winchester. Between Marlow and Gilsum on Route 10 gravel pits in the deltas to the east of the River allow viewing of the bed patterns of the sand and gravels. Here and at the other sand pits, amateur geologists can hypothesize about the effects of meltwater and ice during the glacial retreat.

Just southeast of the river corridor in Gilsum, at Pot Holes and Bears Den State Forest, is a col on Bingham Hill that has many potholes formed by drainage down the east flank of the hill. Not related to the glacial lake drainage, but probably from meltwater from the margin of a receding ice mass, the potholes mark another interesting feature created by the glacial age.

Immediately southwest of the Gilsum Stone Arch Bridge and 1 mile south of the river canyon on Vessel Rock Road, is perhaps the largest erratic moved by the glacier in this area. Brought from the northwest by the ice sheet, Vessel Rock towers in height almost equal to the old schoolhouse beside it. It is about 25 feet high, 45 feet on its long axis, and 32 feet in width. It is estimated to weigh up to 100 tons. The glacier also left depressions or kettle holes, formed by buried ice that later melted to form the holes. A series of these can be seen in the forested area between the road and the River in Gilsum, about 0.7 miles southeast of Roundy's Corner.

A number of drumlins are present in the river valley, some in or near the river corridor. Drumlins are elliptical or ovoid hills formed beneath the glacial ice sheet and composed of glacial till and clay. These drumlins can be seen in Gilsum north and south of the River west of Roundys Corner, north of the River as it bends south in West Swanzey, and west of the River in Winchester about 3.5 miles south from the Coombs bridge on Westport road.

Aquifers

Located within the deposits of sand and gravel left from the activity of the retreating glacier, are aquifers of high and medium potential for producing large quantities of water for public supply. Because of the number and size of pore spaces between the grains of sand and gravel, these deposits can hold and transmit large volumes of water. Areas of high potential are considered to be sufficient to supply municipal and industrial needs. Medium potential aquifers may yield enough water for small municipal and rural water districts and commercial and light industrial use.

High potential aquifers within the river corridor are listed with estimates as to the location based on the Cotton maps'. These maps were created by reviewing the surficial deposits in

'John E. Cotton, Availability of Groundwater in the Lower Connecticut River Basin, Southwestern New Hampshire, (Concord, 1977).

the Ashuelot River Valley. A more thorough investigation and mapping is being completed at this time and should be available from the US Geological Survey later this year.

- 1) From the village of Gilsum, a thin band extending about 1.5 miles upstream along the River.
- 2) From below Surry Mountain Dam to the northern end of Keene.
- 3) About 1.2 miles long in Keene, extending north and slightly west from the intersection of Routes 10 and 9.
- 4) In Swanzey center the large aquifer from the South Branch enters the corridor from its confluence with the Ashuelot to about Eaton Rd.
- 5) In Swanzey north of Westport and South of West Swanzey.
- 6) In Winchester along the Ashuelot from the Winchester/Swanzey town line to about 1.25 miles north of the center of town.
- 7) Winchester, where the River turns west (near Route 119 & 10 intersection) about .8 miles along the River.

Medium potential aquifers are the following:

- 1) From just north of Marlow Village to about 2.5 miles south of the center following the River.
- 2) Gilsum, about 1.5 miles along the River ending near Roundy's Corner.
- 3) Surry, from Shaws Corner extending about 3 miles south.
- 4) Surry adjacent to #2 high potential aquifer listed above.
- 5) Swanzey, from #4 high potential aquifer to West Swanzey.
- 6) Swanzey, east and adjacent to #5 high potential aquifer.
- 7) Winchester, south of #6 high potential aquifer extending about .5 miles.
- 8) Winchester, west along the River adjacent to #7 high potential aquifer.
- 9) Hinsdale, a small area near Rte 63 and 119, about .3 miles along the River.

A large low potential aquifer is located under much of Keene and extends into Swanzey. Another is located adjacent to #3 medium potential aquifer. Low potential aquifers may yield sufficient water to supply domestic and light commercial use. Pumping wells within these aquifers and adjacent to streams may cause surface water to enter the aquifer.

(b) Wildlife Resources

- (1) *List the species of mammals and birds commonly found in the river and river corridor.*

The mammals and birds commonly found in the Ashuelot River and river corridor are similar to those of most of New Hampshire (see Appendix C for complete list). The varying habitats dictate the location of some of the species. In the upper portion of the river valley, moose and bear are more abundant. The rocky ledges and mixed deciduous-coniferous and hardwood forests provide habitat for the bobcat in the upper and lower reaches that are less populated by humans. The upper reaches in Washington and Lempster have a mix of spruce/fir forests, marshes, and hardwoods. This location shows extensive signs of large mammal, waterfowl, and raptor use. The Kinson Tract Wildlife Management Area in Marlow, and the marsh in Washington south of the headwaters are examples of the wetlands along the River that attract moose. The river otter has been sighted throughout the course of the River, as have foxes and fishers. While the Eastern Cottontail is abundant and expanding its range locally, the less common New England Cottontail is maintaining a population in Swanzey.

A mix of trees and shrubs provides a varied habitat for numerous warblers, thrushes, owls, grouse and other game birds. Wild turkeys enjoy the food provided by the oaks dispersed throughout the corridor and pileated woodpeckers frequent the older timber stands. Ravens nest on the hilltops above the River valley, while the abundance of wetlands shelters herons, bitterns, snipes, and waterfowl. An example of the diversity can be experienced at Surry Mountain reservoir where woodcock can be seen performing their mating ritual; snipe and bitterns can be heard in the wetlands; warblers, thrushes, and grouse can be heard and seen in the wooded areas; and ravens can be heard and seen flying amid the rocky cliffs.

Of particular note are the location of Great blue heron rookeries in the watershed. Located in Washington, Marlow, Surry, Lempster, and Chesterfield, these rookeries are either within the river corridor or rely on the Ashuelot River for feeding. A total of 8 colonies (7.5% of the statewide total for colonies) exist here with 37 known nests. Based on New Hampshire Audubon's average productivity estimates for herons in New Hampshire, approximately 60 young herons are produced yearly at these sites.⁴

(2) List any endangered or threatened animals which are supported by the river and river corridor environment. Include location, if known. Check whether these animals are endangered (E) or threatened (T) species and if they are significant at a national (N) or state (S) level.

⁴Chris Martin, Audubon Society of New Hampshire, personal communication, April 9, 1992

<u>Animal Species</u>	<u>Location</u>	<u>E or T</u>	<u>N or S</u>
<u>Polioptila caerulea</u>			
Blue-gray gnatcatcher	Swanzy/Surry	X	X
<u>Gavia immer</u>			
Common loon	Washington	X	X
<u>Chordeiles minor</u>			
Common nighthawk	Keene	X	X

Nesting species of the Ashuelot corridor are the blue-gray gnatcatcher in Swanzy and Surry, the common loon in Butterfield Pond, and the common nighthawk in Keene. Loons have been nesting at Butterfield Pond, the headwaters of the Ashuelot, for greater than eight years and brood in May Pond. They have also been sighted feeding in Ashuelot Pond located further downstream. The flat rooftops within the river corridor in Keene provide nesting sites for the common nighthawk, and their "peent"s can be heard overhead in the summer evening. The blue-gray gnatcatcher enjoys the wooded swamps and streamside thickets of the River.

The River and its corridor also provide habitat for visiting raptors that are threatened and endangered species. The bald eagle which nests in the Quabbin Reservoir in Massachusetts, has been identified feeding in Hinsdale and Swanzy along the Ashuelot. Also at the mouth of the Ashuelot River, peregrine falcons have been observed in January 1992. The Northern harrier, a state threatened species, has been observed in the marshy areas in Swanzy.

(3) *Is the river corridor important for the movement of wildlife between large habitat areas? If yes, explain why.*

The general north-south orientation of the River lends its use as a migration corridor by osprey and other raptors. Also during migration various waterfowl can be seen, with wood ducks and hooded mergansers among the nesting species. Other waterfowl and songbirds use the River to feed and rest as they travel north, using the natural vegetation for food and cover. The catkins from the aspens and birches provide food for songbirds in the spring, the fruiting cherry trees and shrubs provide food in the fall. The river corridor provides an excellent source of insects as food. Waterfowl partake of the vegetative parts of the aquatic and emergent plants as well as seeds, acorns, aquatic insects and fish. Homo sapiens partake of the blueberries and fiddle heads.

Of particular note is the mouth of the Ashuelot where the confluence of the Ashuelot with the Connecticut remains open during all of the year. This attracts numerous waterfowl during the winter months, including the eagles and peregrines who thereby take advantage of the food available there.

The presence of the former railroad beds along the course of the River through Swanzy and Winchester also act as a corridor

for movement by small mammals. The shrubby growth provides food and cover.

The river corridor also includes many areas designated by the New Hampshire Fish and Game as deeryards, their boundaries entering the Ashuelot River corridor. They are named as listed in the following:

-Gilsum--Lower Village, Lower Village South, Spoon's Pond South, and Trout Brook deeryards.

-Surry--Ashuelot River, Bald Hill, Surry Mountain, Shaws Corner, Marvin Hill South, and Dear Den Hill deeryards.

-Swanzy and Winchester--Mt. Cresson, Wheelock Brook, Gardiner Mt., and Swanzy Lake deeryards.

Here the deer may find cover as well as food when not wintering in the yarding areas. To provide for the food needs of the deer are hemlock and oak stands, maple sprouts, and grasses.

(c) Vegetation/Natural Communities

(1) *List the plant species commonly found in the river and river corridor.*

The banks of the Ashuelot River are vegetated with trees and shrubs for the greater majority of its course. This edge is characterized by alternating deciduous, coniferous and mixed forest communities. Open field areas within the corridor are often vegetated on the river banks by either trees or shrubs.

There are no virgin forests remaining within the river corridor itself, as the hurricane of September 1938 destroyed most of what remained of the old growth stands. However, adjacent to the corridor in Winchester is Pisgah State Park where virgin forest continues to exist. This forest, located on Mount Pisgah is abundant in hemlock (Tsuga canadensis), beech (Fagus grandifolia), and sugar maple (Acer saccharum). Hemlock and white pine (Pinus strobus) dominate the climax forest of high slopes and ridges; hemlock and beech in the lower layer; and hemlock, black birch (Betula lenta), and red maple (Acer rubrum) in the very small tree layer one foot or less.⁵

The deciduous forest community represented in the river corridor is often referred to as a transition forest. It is dominated by red oak (Quercus borealis), sugar maple, beech, and paper birch (Betula papyrifera). The understory is well developed with striped maple (Acer pensylvanicum) and hobblebush (Viburnum alnifolium), and many wildflower and fern species are present. Among the likely species located in the herb layer are painted trillium (Trillium undulatum), goldthread (Coptis groenlandica), hairy beardtongue (Penstemon hirsutus), common wood-sorrel (Oxalis montana), kidney leaved violet (Viola renifolia), pink lady slipper (Cypripedium acaule), wood lily

⁵Emma Lucy Braun, Deciduous Forests of Eastern North America (New York, 1950), p.426.

(Lilium philadelphicum), spotted wintergreen (Chimaphila maculata), and sarsaparilla (Aralia nudicaulis).

Mixed with the hardwoods are the two conifers, eastern hemlock and white pine. Eastern hemlock grows in dense stands in cool humid areas of the corridor, often on northern slopes. The forest floor tends to be densely shaded beneath thick hemlock stands. White pine is known as a pioneer species, growing quickly in open areas. It is mixed with other pioneer species, quaking aspen (Populus tremuloides), pin cherry (Prunus pensylvanica), black cherry (Prunus serotina), red maple, gray birch (Betula populifolia) and paper birch (Betula papyrifera). White pine does exist in larger quantities on sand flats and open fields.

Such a sandy area is located within the river corridor in Swanzey, where a large white pine stand grows in Dickinson Forest. This forest is maintained as a white pine forest by the Society for the Protection of New Hampshire Forests. Across the River is Yale Forest which is comprised of white and red pine (Pinus resinosa) stands that are managed for the production of timber. Both areas contain the sandy soils that support the pine.

Located in the upper reaches of the River in Washington is the prevalence of balsam fir (Abies balsamea) and black spruce (Picea mariana) forest. Where openings in the dense forest occur is a shrub layer of arrow-wood (Viburnum dentatum), early azalea (Rhododendron roseum), high bush blueberry (Vaccinium corymbosum), and mountain maple (Acer spicatum). The herb layer contains canada mayflower (Maianthemum canadense), clintonia (Clintonia borealis), goldthread, and bunchberry (Cornus canadensis).

Quaking aspen (Populus tremuloides) predominates in the northern part of the river corridor in Gilsum and southern portion in Marlow. In 1941 a fire spread from western Marlow down into Gilsum, destroying what forest and debris remained after the hurricane of 1938. A growth of aspen developed after the fire, and resulted in the even-aged stand now found in this area on the western bank.

In many areas along the River, red maple predominates on the river banks, mixed with speckled alder (Alnus rugosa) and buttonbush (Cephalanthus occidentalis) in the shrub layer. Black willow (Salix nigra), silver maple (Acer saccharinum), basswood (Tilia americana) and cottonwood (Populus deltoides) are intermingled in this floodplain forest where annual spring flooding is typical. The herb layer consists of typical plants such as sweetflag (Acorus calamus), ostrich fern (Matteuccia struthiopteris), jewelweed (Impatiens capensis), and turtlehead (Chelone glabra).

There are many riparian wetlands within the river corridor containing aquatic, emergent, scrub-shrub, and forest vegetation typical of southwestern New Hampshire. The forested swamps are frequently red maple. Bogs (Swanzey, Marlow), and fens (Keene) are located adjacent to the corridor, marked by Black Spruce

(Picea mariana) and American Larch (Larix laricina). Within the bog is an herb and shrub layer with the typical plants such as sphagnum moss (Sphagnum sp.), pitcher plants (Sarracenia purpurea), sundews (Drosera rotundifolia), leatherleaf (Chamaedaphne calyculata), and rhodora (Rhododendron canadense).

(2) List any endangered or threatened plant species that are supported by the river and river corridor environment. Include location, if known. Check whether these are endangered (E) or threatened (T) plants and if they are significant at a national (N) or state (S) level.

<u>Plant Species</u>	<u>Location</u>	<u>E or T</u>	<u>N or S</u>
<u>Myriophyllum farwellii</u> Farwell's millfoil	Washington	X	X
<u>Carex baileyi</u> Bailey's sedge	Marlow	X	X
<u>Salix pellita</u> Satin willow	Marlow	X	X
<u>Hackelia virginiana</u> Woodland hound's tongue	Surry	X	X
<u>Carex retroflexa</u> Reflexed sedge	Surry	X	X
<u>Isoetes riparia</u> Riverbank quillwort	Keene	X	X
<u>Cyperus aristatus</u> Incurved umbrella sedge	Keene	X	X
<u>Muhlenbergia sobolifera</u> Sprout muhlenbergia	Keene	X	X
<u>Cassia nictitans</u> Wild sensitive senna	Winchester	X	X
<u>Sanicula trifoliata</u> Three-leaved black snakeroot	Hinsdale	X	X
<u>Aristida Longespica</u> var. <u>geniculata</u> Spiked needlegrass	Winchester	X	X
<u>Cenchrus longispinus</u> Burggrass	Hinsdale	X	X
<u>Equisetum palustre</u> Marsh horsetail	Hinsdale	X	X
<u>Potamogeton zosteriformis</u> Flatstem pondweed	Hinsdale	X	X
<u>Potamogeton nodosus</u> Knotty pondweed	Hinsdale	X	X
<u>Anemone cylindrica</u> Long-fruited anemone	Swanzy	X	X

(3) List any vegetative communities supported by the river and the river corridor environment which have been identified as "exemplary natural ecological communities" by the New Hampshire Natural Heritage Inventory (NHNHI). Include location, if known.

Exemplary Natural Ecological Community

Location⁶

Northern New England Seepage Marsh: Marlow

- "A groundwater enriched streamside marsh with an interesting plant association and example of a minerotrophic environment. This community is transitional between an acidic fen (a sedgy, bog community with more nutrient influence and plant diversity than a classic stagnant bog) and a classic marsh with cattails, grasses, herbs and scattered shrubs."

Southern New England Circumneutral Talus Forest/Woodland: Surry

- "Talus slopes in NH typically develop from mass wasting of cliffs and subsequent accumulation of large and medium sized rubble below (talus). Talus size, substrate accumulation and disturbance have important influences on the distribution and degree of vegetative cover. A transitional circumneutral talus forest is an enriched talus slope with canopy dominants including sugar maple (Acer saccharum), or oaks, and a variable composition of butternut (Juglans cinerea), basswood (Tilia americana), white ash (Fraxinus americana), and ironwood (Ostrya virginiana). Oaks usually include red oak (Quercus rubra), and white oak (Quercus alba). Understory shrubs and herbaceous species include round-leaved dogwood (Cornus rugosa), flowering dogwood (Cornus florida), poison ivy (Toxicodendron radicans), eastern red cedar (Juniperus virginiana), false pennyroyal (Hedeoma pulegiodes), Drummond's rock-cress (Arabis drummondii), Missouri rock-cress (Arabis missouriensis), Early saxifrage (Saxifraga virginensis), herb-robert (Geranium robertianum), wild ginger (Asarum canadense), bristly sarsaparilla (Aralia hispida), purple flowering raspberry (Rubus odoratus), and many of the species that also occur on Transitional/Appalachian Acidic Talus Woodlands. Similar to Rich Mesic Forests in the presence of rich-site species, but often dry to dry-moist, and/or with more open-site species (e.g. pussy-toes Antennaria plantaginifolia, and umbel-like sedge Carex umbellata."

(d) Fish Resources

(1) *List the fish species commonly found in the river.*

There are three groups of fish that inhabit the Ashuelot River at this time: migratory species, resident cold water species, and resident warm water species.

Migratory fish spend part of their life cycle in salt water and part in fresh water. They are either anadromous--born and spend their youth in fresh water, migrate to the ocean, and return to spawn in fresh water; or catadromous--reproduce in salt water and migrate to fresh water to reside. Of these species,

⁶Descriptions and locations from New Hampshire Natural Heritage Inventory.

the Ashuelot hosts the catadromous American eel (Anguilla rostrata, Lesueur).

Cold water fish spend their entire life cycle in fresh water and cannot tolerate warm water. Indigenous cold water species are: blacknose dace (Rhinichthys atratulus, Hermann), longnose dace (Rhinichthys cataractae, Valenciennes), burbot (Lota lota, Linnaeus) and eastern brook trout (Salvelinus fontinalis, Mitchill). Stocked by New Hampshire Fish and Game are brown trout (Salmo trutta, Linnaeus) in Marlow, Gilsum, Surry, Keene, and Swanzey. Rainbow trout (Salmo gairdneri, Richardson) are stocked in Marlow, Gilsum and Surry.

Warm water fish are able to tolerate warm water and reside in the warm parts of the Ashuelot all year. These species include: eastern chain pickerel (Esox niger, LeSueur), common shiner (Notropis cornutus, Mitchill), common white sucker (Catostomus commersoni, Lacepede), brown bullhead (Ictalurus nebulosus, LeSueur), yellow bullhead (Ictalurus natalis, LeSueur), yellow perch (Perca flavescens, Mitchill), white perch (Morone americana, Gmelin), largemouth bass (Micropterus salmoides, Lacepede), and pumpkinseed (Lepomis gibbosus, Linnaeus).

Found in mixed areas are walleye (Stizostedion vitreum vitreum Mitchill), fallfish (Semotilus corporalis, Mitchill), and smallmouth bass (Micropterus dolomieu, Lacepede).

(2) List any endangered or threatened fish species supported by the river environment. Check whether these fish are endangered (E) or threatened (T) and if they are significant at either a national (N) or state (S) level.

<u>Fish Species</u>	<u>Location</u>	<u>E or T</u>	<u>N or S</u>
<u>Ligumia nasata</u>			
Eastern pond mussel	Keene	X	X
<u>Alasmidonta heterodon</u>			
Dwarf wedge mussel	Surry/Keene	X	X
(see 1,(d),(3) below for description)			

(3) Describe the presence and location of spawning beds, feeding areas, and other significant aquatic habitat.

A tributary to the Ashuelot provides habitat for the eastern pondmussel. The dwarf wedge mussel is found within the streambed of the Ashuelot and is located in only seventeen localities in seven drainages in the United States. The U.S. Fish and Wildlife Service (USFWS) has identified the Ashuelot River as one of the four most important refuges for this mussel. In their 1990 draft Dwarf Wedge Mussel Recovery Plan, the USFWS states as an objective the protection of rivers providing prime habitat of this species. They note the importance of working with landowners and local governments to support protection of

the species and in working to mitigate impacts to the dwarf wedge mussel and its essential habitats. In addition to the USFWS, local school groups and the Nature Conservancy have been studying and monitoring the dwarf wedge mussel, and have found their numbers to be declining. Generally factors that can affect their decline are pollution and sedimentation resulting from agricultural, industrial, commercial, and domestic runoff; removal of riparian vegetation; development; and road and dam construction.

The upper Ashuelot River from the headwaters in Washington to Gilsum, provides habitat for cold water species. As the River moves further south and becomes wider and slower, the water warms and the species change accordingly. Near the mouth of tributaries, cold water species may be present.

From field work done during the 1960's, the USFWS and New Hampshire Fish and Game Department (NHF&GD) have estimated that there are 520,000 square yards of Atlantic Salmon habitat located in the Ashuelot. This would account for an estimated 5,200 rearing units, each unit expected to produce 1.5 smolts.

(4) Indicate whether the significant fisheries found in the river rely on natural reproduction or a stocking program.

Though some species have been introduced, those listed under warm and mixed water fish are naturally reproducing. Fallfish and shiners are commonly used as bait and provide food for large predatory fish. Large and smallmouth bass are important game fish which were introduced into New Hampshire, the smallmouth in the 1860's.⁷ Also introduced is the walleye, a highly prized table fish. Pickerel are voracious and valuable as sport fish. The cold water species of rainbow and brook trout do not spawn in New Hampshire waters due to their need for alkaline waters. The presence of these fish is dependent on the stocking program of the State. Yearlings are stocked in Marlow, Gilsum, Surry, Keene, and Swanzey.

(5) Is the river a viable anadromous fish resource? If yes, identify any on-going or planned restoration programs

Historically, the Ashuelot River was used by Atlantic salmon for spawning and early life cycle. The Ashuelot is included in the Connecticut River Atlantic Salmon Restoration Program for smolt rearing and fry release. This is a cooperative effort overseen by the 10 person Connecticut River Atlantic Salmon Commission. It involves the USFWS, and the states of Connecticut, New Hampshire, Vermont, and Massachusetts. It is anticipated for the program to begin in the near future, but not

⁷Scarola, John F., Freshwater Fishes of New Hampshire (Concord, 1987), p.96.

to be active in the Ashuelot River within the next five years. Habitat units for Atlantic salmon require a rubble substrate with no large sections of sand or silt, and a current running through the water column. The USFWS has projected an estimated 520,000 square yards of habitat exists in the Ashuelot. However, more field work to identify the habitat units needs to be completed before fry can be stocked.

Federal Energy Regulatory Commission (FERC) licensing for Fiske Mill and the dam at Ashuelot Paper Company require the ability to retrofit the dams for fish passage, should the salmon restoration plan be implemented in the Ashuelot.

(e Water Quality

(1) *Check the state's water quality classification which applies to this river or segment under state law.*

_____ Class A X Class B _____ Class C

Until 1991, the lower segment of the Ashuelot from the AC Lawrence bridge to the confluence with the Connecticut was classified as Class C. Due to technological advances by industry and stricter governmental regulation of discharges, the state has changed the classification to Class B. It is now believed this standard can be met on the Ashuelot.

(2) *According to readily available information, what is the actual water quality of this river under the state's water quality standards?*

Class A X Class B X Class C

In addition to the state's monitoring of the Ashuelot River, local monitoring programs have been active for over five years. The Ashuelot River Watch program has been performing fecal coliform testing along the mainstem and some of the River's tributaries. Keene High School has been monitoring sites from below Surry Dam to just above the West St. dam. A model benthic macroinvertebrate study to analyze impacts on water quality was completed in 1991 and serves as a basis for future studies on the River.

Since its inception in 1987, Ashuelot River Watch found that the waters of the upper Ashuelot River consistently tested well below the EPA guideline for fecal coliforms (200 colonies per 100ml). As a result, since 1989, monitoring efforts were focused on the River and tributaries in Keene and downstream. State data also seem to indicate that water quality problems begin in Keene, and therefore sample regularly at sites located in Swanzey and Hinsdale. The monitoring completed by the Keene High School students shows the fecal coliform count in the stretch from Surry Dam to West St. Dam as consistently low, with occasional readings of 150 being the greatest obtained and at the West St. site.

Areas noted by River Watch that exceed the EPA Guideline for fecal coliforms are at the Cresson Bridge in Swanzey, the reach behind the dam in W. Swanzey, and below the Depot St. bridge in Hinsdale. State data over the years for a site at the Rte 63 bridge in Hinsdale show frequent violation of the coliform standard at that site, as well as at the Cresson Bridge. However, both River Watch and the state data show improvement in 1991.

Dissolved oxygen (DO) levels taken at the Cresson site and Rte. 63 site are high, with saturation greater than the minimum 75% required by the state. Keene High School testing of DO shows high values at all the sites above the West St. dam.

State sampling shows the levels of heavy metals in the Ashuelot are acceptable for both aquatic life and human health, though Keene High School students express concern with occasional high cadmium concentrations.

(3) If the river is not currently supporting its water quality classification, identify the existing major causes of deficient water quality (e.g., industrial or sewage pollutants, agricultural fertilizer runoff) and possible corrective measures (e.g., regulations, enforcement, local land use controls).

A two year wasteload allocation study was completed in 1989 by the NH Water Quality/Permits and Compliance Bureau. This study recommended that the Keene Waste Water Treatment Facility (WWTF) be upgraded to tertiary treatment. Though there were no Class B water quality dissolved oxygen (DO) violations at the Keene WWTF, the DO above the facility was below Class B standards. It was recommended that the City of Keene investigate the possible sources of pollution which are lowering the DO upstream of the WWTF.

Both River Watch and the City of Keene have been increasing their monitoring of problem areas, resulting in replacement of some sewer pipes. Possible sources of contamination may be from domestic sewage coming from pipes that have never been hooked up to a sewage system. In Swanzey, the working hypothesis is that domestic sewage may still be the problem in West Swanzey, and investigation by local officials is in progress. In Winchester the village of Ashuelot was recently placed on line to the Winchester WWTF, and it is hoped this will improve the coliform readings downstream.

Other water quality concerns are phosphates and petroleum products. Phosphate loading appears to culminate in the area immediately above the W. Swanzey dam, resulting in algal blooms. Intermittent petroleum products have been observed in the tributaries of the Ashuelot and the mainstem in Keene. Whether these are resulting from leaking underground storage tanks or industrial discharge is yet to be determined.

Potential toxic pollutants are the concern in Winchester where the AC Lawrence Leather Company once operated on the western banks of the River. In 1983, the company was convicted

in Federal Court for 30 counts bypassing its water treatment facility and illegally discharging into the Ashuelot. Closed since 1987, its buildings remain unoccupied, and its storage tanks intact, but concern remains that pollutants may be contained in the soil.

Generally it is believed that stricter enforcement of state regulations, on both a local and state level, would aid the restoration of the water quality in the Ashuelot.

(f Open Space

Briefly describe the significant areas of open space and the predominant types of land use in the river corridor (i.e., forest management, agriculture, industrial, residential, etc.). Describe any protected land parcels (e.g., state parks and forests, national forest lands, and conservation easements). Include location.

Washington--

Located at the headwaters of the Ashuelot River is the 9,000 acre Pillsbury State Park, a relatively undisturbed wilderness of woods, ponds, wetlands, and hillsides. "Cherry Valley" so called by the early settlers because of the abundant cherry trees, once was the site of a settlement with sawmills and a schoolhouse. The first parcel of land was deeded to the public by Albert E. Pillsbury in 1920.

Marlow--

Immediately south of the center of Marlow is the Kinson Tract Wildlife Management Area. The River flows through this tract of wetlands owned and managed by New Hampshire Fish and Game.

Surry--

Owned and operated by the U.S. Army Corps of Engineers, Surry Mountain Dam provides flood storage capacity of 33,000 acre feet, but also provides open space and a recreation facility on its 1,625 acres. The Surry Mountain Recreation Area provides open water (265 acre lake), wetlands, wooded hillsides and open fields.

Keene--

Owned and managed by the City of Keene is the Ashuelot River Park, consisting of 46 acres and approximately 2.5 river miles. The Park affords wooded pathways, and protection for the riparian wetlands. It includes part of Tenant Swamp, an extensive wetland. Downstream is Hickey-Dislets Park, a small city park on the bank of the Ashuelot, located at the intersection of Island and Winchester Streets.

Swanzey--

-The River as it enters Swanzey, flows through a mix of wooded and wetland habitats. Immediately south of Keene, off the east bank of the River, is located Dillant-Hopkins Airport, owned and operated by the City of Keene. This land remains open, with a wooded river corridor and extensive wetlands. The land is undeveloped for over two river miles.

-In the river corridor on the west is Mount Cresson, 135 acres owned and managed as town forest by the Town of Swanzey.

-Continuing downriver, on the west bank is open farmland followed by Yale Forest. Yale Forest is 235 acres owned and operated as a demonstration parcel for the forestry school at Yale University in New Haven, Connecticut. The parcel is comprised of red and white pine stands, and includes an oxbow pond with a red maple/scrub-shrub swamp.

-Shortly after Yale Forest is Dickinson Forest, 65 acres owned and managed by the Society for the Protection of New Hampshire Forests. This is noted as an outstanding pine plantation and contains almost 4,000 ft. of river frontage. Also located within this parcel are two oxbow ponds and their associated wetlands.

-Adjoining Dickinson Forest is the 18 acre "Muster" parcel recently acquired by the town as conservation property. This parcel is open field on a peninsula with scrub-shrub wetlands, and approximately 2,800 feet of river frontage.

Winchester--

-Before reaching the populated center of Winchester is a long stretch of farmland with wetlands interspersed, alternating with large forested tracts. Extending into the river corridor is the 180 acre town forest which includes the southwest slope of Gardiner Mountain.

-South of the center of town is another wetland area where Mirey Brook enters the Ashuelot.

-After Mirey Brook and south of the 119 bridge is a 189 acre parcel of land that is being transferred from the Nature Conservancy to the Winchester Conservation Commission for management as conservation land. This parcel extends outside the river corridor and includes what the Conservation Commission considers prime wetland area.

-West of the village of Ashuelot, the southern edge of the 13,400 acre Pisgah State Park dips into the northern river corridor in Winchester, providing a forested backdrop.

Hinsdale --

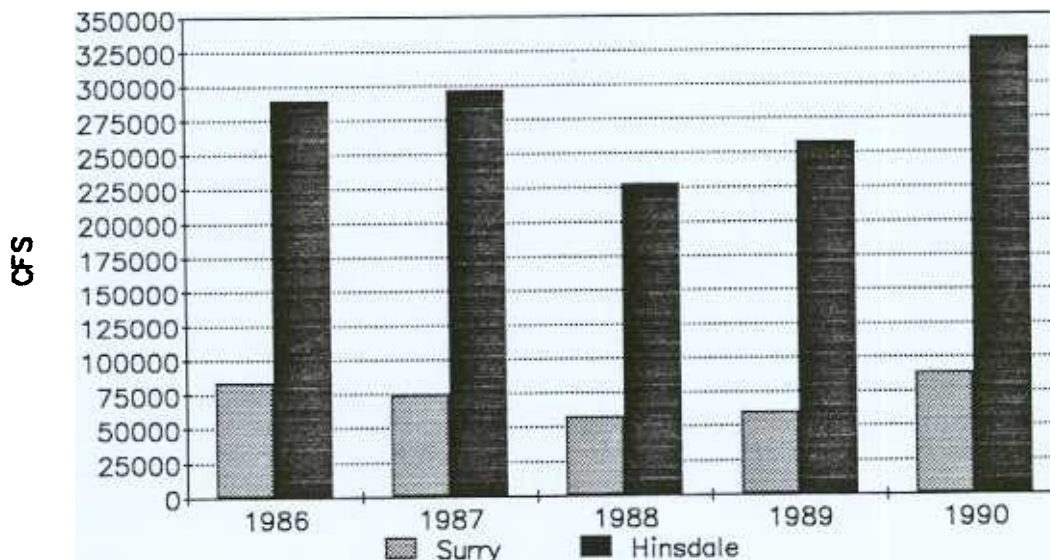
A large farm field dominates the southern corridor after the Route 63 bridge. As the River approaches the Connecticut River, the land is open fields and forest in the northern corridor.

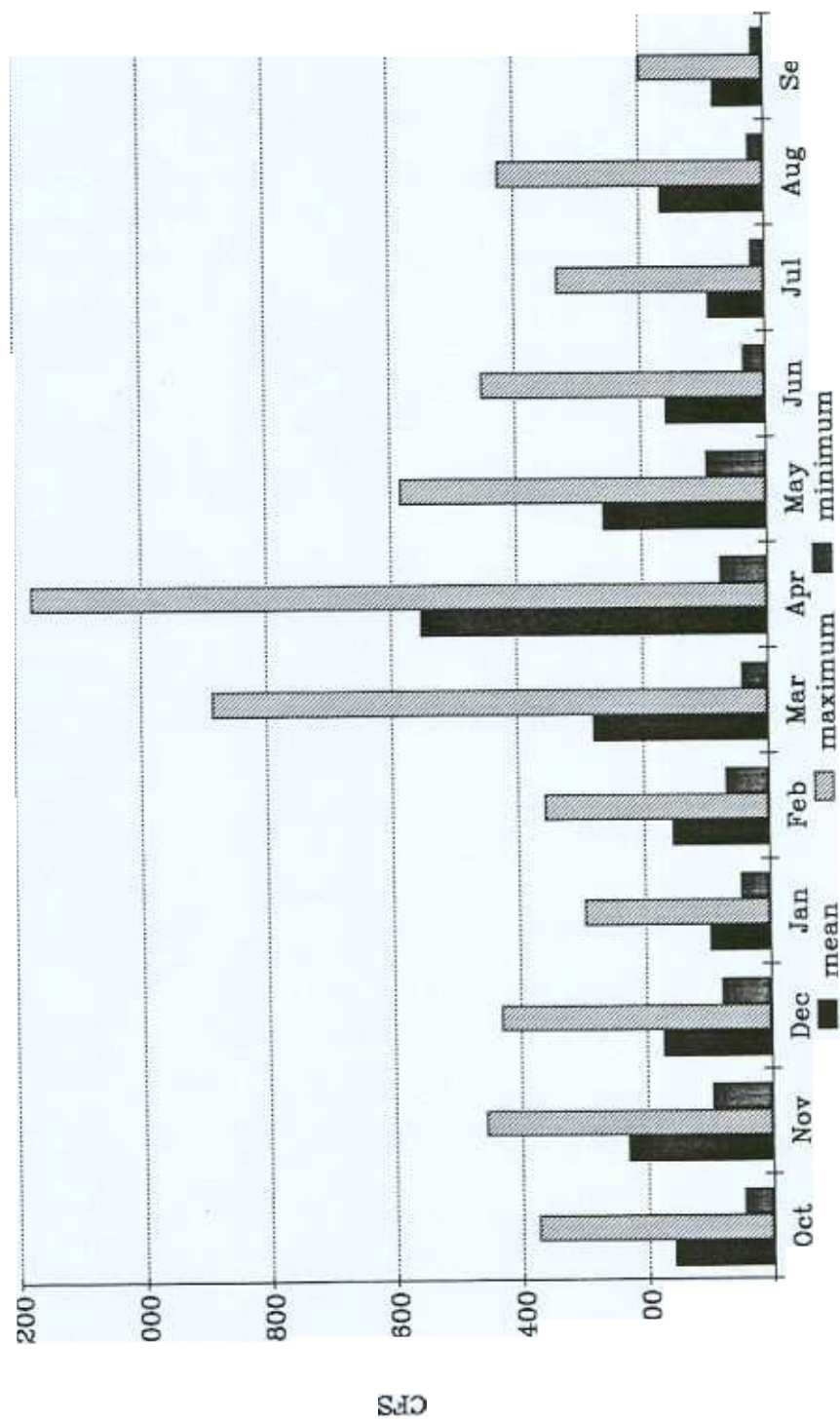
(g) Natural Flow Characteristics

Briefly describe the natural flow characteristics of the river, including natural periodic variations in flow or, if applicable, variations caused by impoundments, significant diversions, or channel alterations. Indicate where the river is free-flowing.

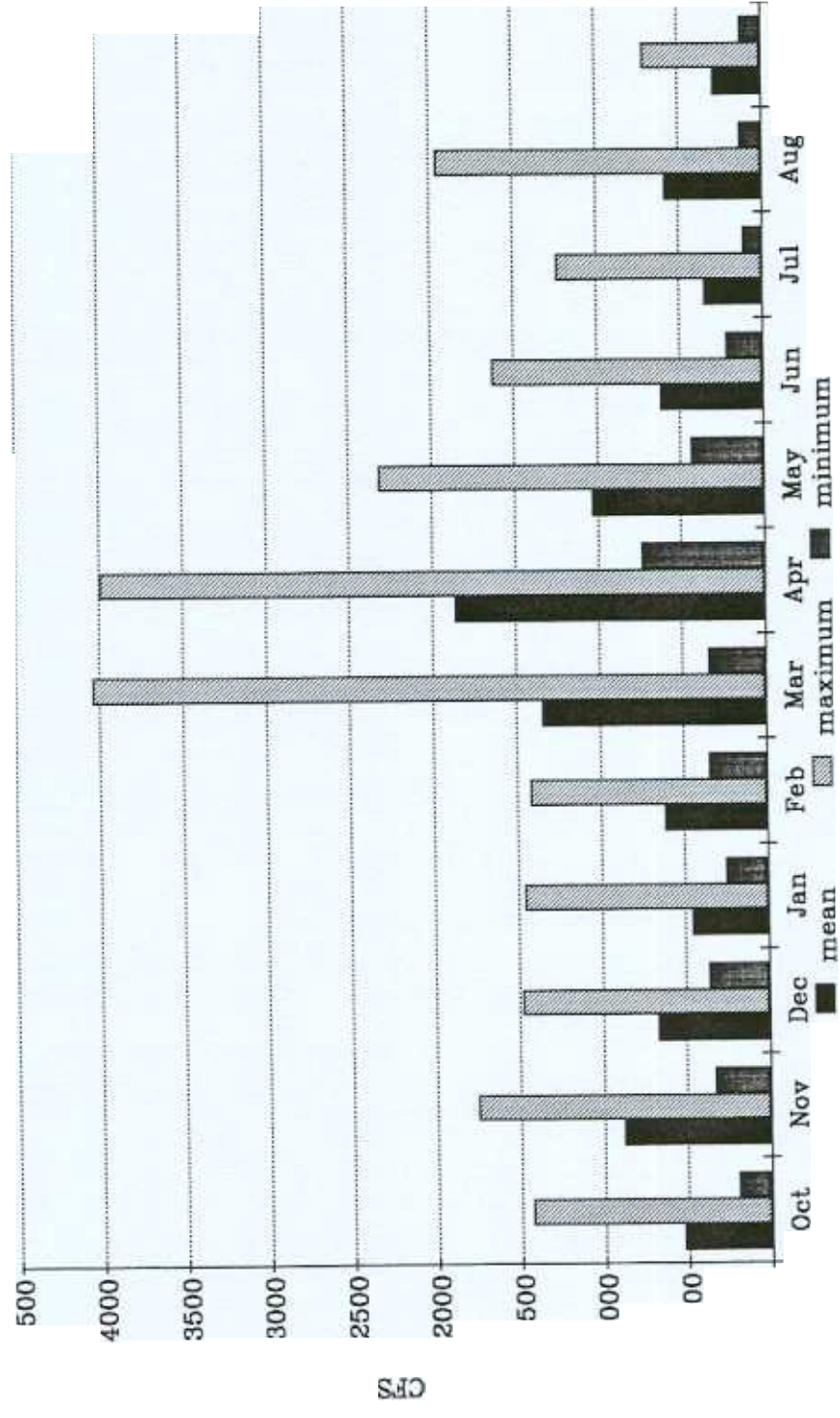
The Ashuelot River drainage basin encompasses 420 square miles from its northern boundary including Cherry Brook and North Pond to its mouth at the Connecticut River. There are two active USGS gauges located on the Ashuelot. Located below the Surry Dam is a gauge measuring the accumulated flow from 101 square miles of drainage basin. Located at the mouth in Hinsdale is the second gauge reflecting the total river discharge for the watershed. Included are three charts showing five year averages of river discharge as measured at these gauges, as well as monthly extremes in flow. These figures are reported in water years beginning October 1 and ending September 30. Streamflows are given in cubic feet per second (cfs), one cubic foot of water is equal to about 8 gallons of water.

Comparison Yearly Discharge
5-year averages: Surry & Hinsdale





Daily Discharge Hydrograph
 Average / Month 1986-90



The River has several active dams. Some affect water flow, and others permit the free flow of water over their barrier. The Ashuelot remains basically free-flowing through much of its course. The active dams in Washington, the village of Marlow, Keene, West Swanzey, and the center of Winchester allow the water to pass unimpeded during normal river levels.

There are two flood control dams within the watershed, Surry Mountain Dam and Otter Brook Dam, both regulated by the US Army Corps of Engineers. Surry Mountain Dam is located on the mainstem, Otter Brook Dam is on the same named tributary. The quantities shown in the previous discharge charts are not corrected for storage at Surry reservoir, as the level is held rather constant unless flooding is eminent."

The flow is disrupted in a 1500 foot long reach below Nash Mill Hydro in Marlow. The hydro dams in Winchester and Hinsdale create diurnal fluctuations in flow below their mills (see "impoundments").

2. Managed Resources

(a Impoundments

List all of the dams which are present in the river, including any dams which are breached or in ruins. Identify their location, ownership, and purpose (i.e., flood control, hydroelectric energy production, or storage). Include any proposals for new or reconstructed dams; indicate that this is a proposed dam by placing an asterisk (*) next to the name of the dam.

<u>Name of Dam</u>	<u>Location</u>	<u>Ownership</u>	<u>Purpose</u>
Butterfield Pond	Washington	DRED	storage
Ashuelot Pond	Washington	Lake Ashuelot Estates Association	storage
Ashuelot River	Washington	L. Harry Mason	storage
Village Pond	Marlow	Audio Accessories Incorporated	storage
Nash Mill Hydro	Marlow	Arthur E. Cohen	hydro
Ashuelot River	Marlow	unknown	breached
Ashuelot River	Gilsum	unknown	breached
Ashuelot River II	Gilsum	Shirley Grover	breached
Ashuelot River I	Gilsum	Elaine Wilk	breached
Ashuelot River III	Gilsum	James Blackstock	breached
Ashuelot River IV	Gilsum	Edna L. Winhem	breached
Surry Mtn Dam	Surry	US Army Corps of Engineers	flood control
Ashuelot River	Keene	City of Keene	storage

* Telephone conversation 5/4/92 with Bob Mirick, U.S. Army Corps of Engineers, New England Division, Waltham, Massachusetts.

<u>Name of Dam</u>	<u>Location</u>	<u>Ownership</u>	<u>Purpose</u>
Ashuelot River	W. Swanzey	Homestead Woolen Mills	storage
Ashuelot River	Winchester	Town of Winchester	storage
Ashuelot River	Ashuelot	A. L. Faust	breached
Ashuelot River	Ashuelot	A. L. Faust	breached
Lower Robertson Dam	Winchester	Hydroelectric Development Incorp.	hydro
Ashuelot River	Winchester	Ashuelot Paper Co.	hydro
Ashuelot River	Hinsdale	G.E. Robertson & Co.	storage/ diversion canal
Ashuelot River	Hinsdale	Fiske Hydro Inc.	hydro

Nash Mill in Marlow operates as a "run of the river" facility with maximum storage of 20 acre-feet. The owner is required to pass the prevailing river flow through the dam's penstock to allow discharge to equal inflow, or a minimum of 23 cubic feet per second (cfs). Also required is maintenance of a minimum flow of 5 cfs for the 1500 foot by-passed river segment created by the dam.

Surry Mountain Dam creates a reservoir 260 acres in area with a maximum depth of 15 feet. The flood storage area of this project totals 970 acres and extends about five miles upstream from the dam. The holding capacity is approximately 10.6 billion gallons of water, or the equivalent of 5.9 inches of water covering its drainage area of 101 square miles.

Lower Robertson Dam is a "run of the river" project located a little more than 3 miles from the mouth of the Ashuelot. It creates an impoundment of 8.6 acres at an elevation of 386.1 feet mean sea level (msl). This project is less than 5 megawatts and is exempt from Federal Energy Regulatory Commission (FERC) licensing.

The dam owned by Ashuelot Paper Co. in Winchester, approximately 3 miles upstream from the mouth of the Ashuelot, is also "run of the river", less than 5 megawatts, and exempt from FERC licensing. A 3 acre impoundment is created with a pool elevation of 338.9 feet msl, and a storage volume of 24 acre feet. The NHF&GD requires that an instantaneous flow of 205 cfs, or that equal to river inflow be maintained. Also contained is the condition for installation of fish passage facilities when deemed necessary by NHF&GD, US Fish and Wildlife Service, or National Marine Fisheries Service.

Fiske Mill, located approximately 1 mile upstream from the Ashuelot's confluence with the Connecticut, is a "run of the river" dam impounding 4 acres at an elevation of 228.8 feet msl. Required with FERC licensing is the ability for retrofitting to accommodate fish passage in the future. Instantaneous flow of 208 cfs or that equal to inflow is also required by the license.

In 1970 the US Army Corps of Engineers (USACE) proposed an additional dam project, Hammond Hollow. The Comprehensive Water and Related Land Resources Investigation/Connecticut River Basin

proposed a dam for future flood control on the Ashuelot River in Surry, where Bald Mountain and Surry Mountain form a more narrow valley. It is listed as part of a long range plan, but is not mentioned in the USACE's 1989 Water Resource Study/Ashuelot River Basin NH.

(b) Water Withdrawals and Discharges

(1) *List any significant water withdrawals from the river, including withdrawals for public drinking water, industry, and agriculture. Identify the purpose of the withdrawal (i.e, irrigation) and location. Indicate if the river has been identified in a state, regional, or local study as a potential source of water supply and, if so, identify the study.*

The following are current withdrawals as listed with the NH Water Resource Division. Average daily withdrawals are listed in thousands of gallons (AVGDD) as recorded by the Division.

<u>Withdrawal</u>	<u>Purpose</u>	<u>Potential Source?</u>
Marlow Power--	hydroelectric power (11,061 AVGDD)	
Keene Water Works--	water supply from wells (3,000 AVGDD)	
Keene WWTF--	sewage treatment (3,000 AVGDD)	
Swanzy WWTF--	sewage treatment (2,500 AVGDD)	
Winchester Water Works--	water supply from wells (550 AVGDD)	
Winchester WWTF--	sewage treatment (160 AVGDD)	
Ashuelot Paper Co.--	industrial (100 AVGDD)	
Paper Service--	industrial (110 AVGDD)	
Hinsdale Water Works--	water supply from wells (600 AVGDD)	
Hinsdale WWTF--	sewage treatment (175 AVGDD)	

Plans for a potential withdrawal are contingent on the US Army Corps of Engineers. The Massachusetts Water Resource Authority has requested the Corps consider holding water in Otter Brook (a tributary to the Ashuelot) and other reservoirs in the Connecticut River watershed for gradual release during dry months when the Montague Massachusetts gauge reads low. This would mean an increase in the amount of storage held at Otter Brook, and concern is that the Surry Mountain Reservoir might also be considered. The Connecticut River Flow Augmentation Study is currently being completed by the Corps as a first step in

considering this proposal. Results of the study were expected to be publicized in June 1992, but were not available at the time of this writing.

(2) List all known surface water discharges to the river and identify the source, type (ex., industrial wastewater), and location of the discharge. Indicate whether the discharge has been permitted by the state (yes or no).

<u>Point Source Discharge</u>	<u>Type</u>	<u>Location</u>	<u>Permit?</u>
Cheshire Medical Center-- cooling water		unnamed brook Keene	
Zinn Groundwater Treatment System-- treated contaminated groundwater		storm sewers Keene	
Keene WWTF-- treated municipal wastewater		Swanzey	
Swanzey WWTF-- treated municipal wastewater		W. Swanzey	
Winchester WWTF-- treated municipal wastewater		Winchester	yes
Ashuelot Paper Company, Inc.-- treated industrial wastewater		Ashuelot	yes
Paper Service Limited-- treated effluent		Ashuelot	
Hinsdale WWTF-- treated municipal wastewater		Hinsdale	yes

No unpermitted discharges were noted in any of the towns

3. Cultural Resources

(a) Historical and Archaeological Resources

List any significant historical and archaeological resources found in the river or river corridor. Identify whether the resource is listed or is eligible to be listed as a National Historic Landmark (NHL) or on the National Register of Historic Places (NRHP) or is a recognized Historic district (HD) or Multiple Use Area (MUA). If known, indicate whether these resources are significant at a national, regional (New England), state, or local level. Below this listing, note any local town histories, word of mouth, or general historical knowledge about the use of the river and its corridor.

**Historical/Archaeological Listing/Eligibility Significance
Resource**

Jones Hall (Marlow), NRHP, Local-

Construction of this 18th century meeting house began in 1792 and was completed eight years later. Moved in 1845 from its original location in Marlow to its current setting, the building was transformed into an example of Greek Revival architecture.

Gilsum Stone Arch Bridge (Gilsum), NRHP, State-

Of some thirty dry-laid bridges remaining in NH, the arch of this bridge is the highest (35' 6" above average stream elevation on the upstream side. Built in 1863 by William Leonard Kinsbury, this bridge was preceded by five timber bridges and the first stone arch bridge in 1861-62. The first stone bridge collapsed in less than a year due to errors in construction. The current bridge is considered a significant example of the skillful engineering developed in NH in the latter part of the nineteenth century.

Catherine Fiske Seminary for Young Ladies (Keene), NRHP, State-

Built in 1804 with a Federal design, this building was later modernized as an ornate Italianate structure. Opened from 1824-1844, this school gained a wide reputation for excellence as the first boarding school in the State.

Dinsmoor-Hale House (Keene), NRHP, State-

Built in 1860 as a symbol of the splendor of former days, this Italianate house was home to former NH governors Samuel Dinsmoor and Samuel Hale.

Elliot Mansion (Keene), NRHP, Local-

Captain William Wyman originally built this hipped roofed brick homestead in 1810. It later became the home of the James B. Elliot family, and now houses the President of Keene State College.

Dr. Daniel Adams House (Keene), NRHP, Local-

A Greek Revival structure built in 1795, this building maintains architectural integrity as an amalgam reflecting evolution of a dwelling structure.

Sawyer's Crossing Covered Bridge (Swanzey), NRHP, Unlisted-

Built in 1859 as a reconstruction of the first bridge built sometime before 1812. A dance was held on the bridge to celebrate its completion. The bridge is about 159 feet long and 17 feet wide and supported by a granite center pier. Framing of the sheathed walls is of lattice-truss design. The cost of construction was \$1735.94.

West Swanzey Covered Bridge (Swanzey), NRHP, State-

Built in 1832 by Zadoc Taft at a cost of \$523.27. It is 155 feet long with a center pier, and of town truss design with partially open sides. A sidewalk is built

into the upstream side of the bridge. An archway over the downstream side balances the lines of the bridge from the roadway.

Slate Covered Bridge (Swanzey), NRHP, Significance Unlisted-
A covered bridge existed at this site 150 years ago "more or less". It was used until 1842 when William Wheelock and a team of four oxen began to cross the bridge and it collapsed, dropping them into the River. The present bridge built in 1862 at the cost of \$1850.64, is of town lattice structure reinforced with iron turnbuckle rods. It is 122 feet in length and 17 feet wide.

Coombs Covered Bridge (Winchester), NRHP, Significance Unlisted-
Built in 1837 by a man named Coombs, this bridge is of town truss design. The stone abutments are constructed without the use of mortar. The bridge is about 118 feet long and 17.5 feet wide.

NH Conservatory of Music & the Arts (Winchester), NRHP, Local-
Situated in a focal location on Central Square in Winchester, this building is a example of Colonial Revival Architecture. It currently houses the United Church of Winchester.

Conant Public Library (Winchester), NRHP, Local-
Located on Central Square, this 1890 building is a fine example of Romanesque Revival architecture. It continues as a library today.

Winchester Town Hall (Winchester), NRHP, Local-
Built in 1911 of Gothic Revival architecture, it is the only such Town Hall in NH.

Ashuelot Covered Bridge (Winchester), NRHP, State-
One of the most elaborate of New Hampshire's covered bridges, this bridge was built in the 1850's when the railroad first came to this part of NH. The original use was for hauling wood across the River to stoke the wood-burning engines. About 178 feet long with a center pier, it has a roadway of about 17 feet, its full width is 29 feet. Located on the upstream side is a sidewalk. With its lattice-truss sides unsheathed, the bridge is open to air, light and views.

Todd Block (Hinsdale), NRHP, Local-
This building was the focal point of local commerce and fraternal activity in the Connecticut River Valley for nearly 100 years. It is built in French Second Empire style and has a Queen Anne style porch.

New Hampshire Historical Markers located within the corridor:
Surry Mountain Gold Mine and Lily Pond (Surry)-- For many years mines here yielded small amounts of mica, copper, lead, silver and gold. In the saddle of the mountain is Lily Pond, some 750 feet above the valley meadows. Often called a freak of nature, this pond has been measured to be 80 feet deep in some places.

Hampshire Pottery (Keene)-- About 150 feet north of this site on lower Main St. stood Hampshire Pottery Works founded by James Scolly Taft for the manufacture of earthenware. In 1878 Majolica ware was a major product followed in 1883 by the addition of useful and decorative art objects. With the introduction of the "mat glaze" in 1904, Hampshire Pottery became recognized as a leader in its field.

Hinsdale's Auto Pioneer (Hinsdale)-- Opposite this site was located the Holman and Merriman Machine Shop, where in 1875, George A. Long built a steam-propelled four wheel automobile with a fifth wheel for steering. This vehicle, fired by hardwood charcoal, had a bicycle-type frame, wooden wheels, solid rear axle and could maintain 30 miles per hour. George Long patented and built another automobile propelled by gasoline that is now in the Smithsonian Institution.

Archaeology

The Ashuelot River hosts seven Indian sites in Swanzey, and five sites in Winchester to Hinsdale. These sites range from Paleo-Indian (10,500 years ago) to the Fort Hill Hinsdale contact period (1640 AD). Within the Swanzey region two years of intensive site-specific field work had taken place at the Whipple Paleo-Indian Site. A number of artifacts have been collected from the Whipple site and the other sites along the River.

Also in Swanzey is the location of an old Indian dam south of the Cresson Covered Bridge and near an area known as the "Sand Bank". Now under water due to the West Swanzey dam, the weir is constructed in a "V" shape with an opening at the apex. It is believed the Indians speared salmon at this site as the fish passed through the opening. The dam was exposed for the first time since 1950 during the summer of 1991, when low river levels brought the dam into view. In the 19th century more than twenty Indian fireplaces were unearthed as fields were ploughed, an indication of the tribal village that had once occupied this location.

Steel Truss Bridges

Built in a time between wooden bridges and the I-beam bridges of today, steel truss bridges are now declining in the New Hampshire landscape. These bridges replaced the iron bridges that were considered to be more economical than the covered wooden bridges preceding them. Steel truss bridges resulted with the widespread use of the automobile. The trusswork allowed the use of smaller I-beams and the spanning of rivers without too many piers. Renewed interest in iron/steel truss bridges grew after the destruction of the historic Walpole-Bellow Falls Arch bridge in 1982. New preservation laws were passed and old ones are now being enforced. One of the four remaining road bridges, and one of the railroad bridges are located on the Ashuelot River.

Elm Street Bridge (Winchester)

Built in 1921, this is a one span Warren truss bridge. Its clearspan length is 117 ft, its overall length is 123ft. A 5 foot wide wood decked sidewalk with ornate railing is built on the downstream side. Located at the site of earlier bridges (including an iron truss bridge which this replaced), Elm Street Bridge is slated for renovation next year.

West Swanzey Railroad Bridge

Built by the Boston Bridge Works this bridge is thought to date to the 1880's-1890. Some say 1900-1915. It was built with Double-Intersection Warren Truss work, and has ornate portal bracing. Downstream in the bend of the River was a well known Hobo camp frequented by Hobo's in the 1930's.

Stone Arch Bridge

In addition to the dry laid arch bridge in Gilsum, is the stone arch bridge located in Keene, constructed with the use of mortar. This bridge is double arched and built in 1840 for what was then the Cheshire Turnpike.

General History

The southern portion of the Ashuelot River valley was inhabited by the Squakheag Indians when the settlers first arrived. The Squakheag name comes from the bend in the Connecticut River just south of the mouth of the Ashuelot called "Namus Squam-aug-khige" or "spearing place for salmon". The rivers provided Indians and settlers alike with ample salmon and shad. Several confrontations between Indians and settlers erupted during the early 1700's, causing settlements to form, suffer destruction, be abandoned and then resettled. Hinsdale, Winchester, Swanzey, and Keene became incorporated in the years 1752-3. Settlement of the towns in the upper Ashuelot valley followed about ten or more years later, Marlow 1761, Gilsum 1765, Washington 1768, Surry 1769, Lempster 1772, and Sullivan 1787.

While the initial attraction for settlement was the prime farmland afforded by the river valley, the River as a source of water power became a major resource. As early as 1747, grist mills, fulling mills, and saw mills powered by the River were built. By the 1800's industries throughout the river valley flourished. Evidence of the mills are still visible today in all the river towns where industry grew and villages developed with the help of the River's power. A few sites are mentioned here.

-Washington, at Pillsbury State Park between Mill Pond and May Pond is the evidence of the earlier saw mills that operated there .

-Lempster, south of the Washington-Lempster Rd are the large remnants of an elaborate mill site with a stone canal. The water was diverted from the Ashuelot to this site, and the diverted stream is still present about 75 east from where the road crosses the River.

-The dam from Symondsville saw mill in Marlow exists today, as does the dam at Cohoos Pond where Hodgman's Rake Factory operated. The dam located at Village Pond once supplied electricity to the village.

-In Gilsum, perched above the gorge and beside the road is the cellar hole of a former peg shop. On the upstream side of the arch bridge are the remnant boulders of the mill site that once operated there. Up river from that site is a woodturning shop where Colon's mill operated in the 1880's.

-The Faulkner Colony dam and restored Mill and Marketplace are testimony to the industrial past in Keene influenced by the River.

-Swanzy's Homestead Mill though no longer functioning as a woolen mill, still houses the turbines that ran from the dam outside its building in West Swanzy in the mid 1800's. In Westport, the rapids, then called the "lower falls" were used to power the various mills located there as early as 1782. Remnant boulders of one of the mill sites remain visible today.

-The New England Box Company was located at the site of the dam in the center of Winchester. Logs were stored on the river banks and then carried by the River to the box company until the depression years of the 1930's.

-The empty buildings of AC Lawrence Leather Company are located on the western bank of the River in Winchester. Operating from 1836 to 1987, this company was a significant employer and contributor to the economy in Winchester.

-The former Erving Paper Mill, originally built in 1826 as the Ripley and Harrington mill, continues to endure on Hinsdale's Main St. Awaiting rejuvenation through the management of the Hinsdale Commercial and Industrial Development Corporation, this building housed manufacturing powered by water with steam as an auxiliary.

In 1819 a company was formed to transport heavy articles from the Connecticut to Keene by boat. Teams would transfer the articles past the rapids in Hinsdale and Winchester, the rest would be done by the River. Locks were built at the falls at Westport and West Swanzy. A canal was projected in 1832 to bring boats as far as Shaws corner in Surry for the iron mined there. However, the project was discontinued, as it proved not to be a profitable enterprise. The coming of the railroad in the region was also thought to have influenced the abandonment.

The River also provided the setting for tourism in the Ashuelot Valley's early years. In Marlow are old inns and tourist lodges that housed hunters and fishermen attracted to the region. The Christmas Tree Inn, built in 1840, located on Village Pond has been recently restored and is now used as a commercial building.

(b) Community Resource

Briefly describe how the river is recognized or used as a significant community resource.

Historically the River attracted settlers because of the potential for fertile land for farming. Settlements grew along the River and its source as water power also became an important part of the community's development. Patterns of mills and farms created then remain visible today.

Water power from the Ashuelot continues as an economic resource with a hydroelectric dam in Marlow, and two hydroelectric dams used to power the paper mills in Winchester and Hinsdale. The former mill sites along the River are used today to house other forms of manufacturing and commercial ventures. The Colony Mill Marketplace in Keene is an example of a renovated mill for commercial use. The former Homestead Woolen Mill in West Swanzey currently houses various light industrial businesses.

Other economic values include the assimilation of treated wastewater from the four municipal wastewater treatment plants and the Ashuelot Paper Co., and the use of river water for production by the paper industries. Two municipalities (Keene and Hinsdale) withdraw drinking water from wells located within the aquifers along the Ashuelot. Farming has declined as development increased over the years, however the fields along the River in Surry and Swanzey continue to be cultivated, and extensive land in Winchester is devoted to agriculture.

The River continues to be of socio-cultural value as towns hold various events around the River and its corridor:

- Marlow--"Children's Fishing Derby" on Village Pond sponsored by Marlow Parks and Recreation Committee.
- "Winter Carnival" held every year in which the frozen river and Village Pond plays a significant role.
- "Old Home Day" - the River provides scenic background and is incorporated in activities held in the center of town during this annual event.
- Gilsum--annual "Rock Swap" held the last weekend in June for now 28 years. Rock hounds can browse, purchase, or swap minerals, rocks, and jewelry. This is held at the ballfield behind the Gilsum School, within the river corridor where the attributes of the Ashuelot River can be enjoyed as well. As many as 10,000 people per year have participated in this two day event.
- Keene--annual "Art in Ashuelot Park", an exhibit held in the summer by the Keene Art Association at Ashuelot River Park.
- "The Great Ashuelot River Duck Race" held annually in May by the Keene Lions Club and Cheshire County Savings Bank. This is a fund raiser that had raised \$22,000 in 1991 for local charities.

- "The Upper Ashuelot Canoe Race", an annual race in May, sponsored locally and sanctioned by the US Canoe Association. The race begins in Keene and continues to the finishing line in West Swanzey at the covered bridge. As many as 300 individuals yearly have participated in this race which serves as the state championship.
- Swanzey--annual "Poling Clinic" held in May in the waters below the West Swanzey dam and sponsored by the New England Division of the American Canoe Association.
- annual canoe trip on the Ashuelot sponsored by the Swanzey Conservation Commission. Often held in spring to enable inclusion of a tributary of the Ashuelot.

The River remains as a recreational resource in all seasons used by numbers of canoers and kayakers, hikers, bicyclists, skiers, skaters, birdwatchers, sightseers, fishermen, and nature enthusiasts. All enjoy the benefits of the river parks and trails, as well as the natural environment the River itself provides.

4. Recreational Resources

(a) Fishery

Identify any high quality recreational fisheries which are present in the river. Include location, if known.

The Ashuelot River is mentioned in various fishing guides. The AMC Guide to Freshwater Fishing in New England describes the upper reaches with cold, fast moving water as good locations for rainbow trout and brown trout. DeLorme Mapping Co. in its book New Hampshire Fishing Maps lists Ashuelot Pond for small mouth bass, large mouth bass, pickerel, hornpout, and yellow perch. It states the ice fishing is excellent here. This guide also maps the upper reaches between Marlow and Gilsum for best fishing.

Surry Mountain Lake promotes itself as prime habitat for largemouth bass, bullhead, chain pickerel, and yellow perch. Ice fishing is popular here as well, evidenced by the number of huts constructed on the frozen lake during the winter.

Local fishermen extol the portion of the River between Route 10 in Gilsum and Surry Mountain Lake as some of the best fly fishing for trout in the region. Fishermen not only enjoy the fishing from opening day to mid-summer, but appreciate the relatively unspoiled setting. This area is stocked by NHF&GD with rainbow and brown trout, but an occasional brook trout has been known to have been caught along this reach.

There are several wide, flat sections that are considered favorite fishing spots in Marlow. Some of these sites are even suitable for small engine or rowboat fishing, such as Village Pond and Big Pond.

Fishing in the lower reaches of the River is an active sport though consuming the catch is done more cautiously due to concern over past pollution. In Swanzey, backwaters such at the "Eddy" at Dickinson Forest are frequented by fishermen. In Winchester, favorite spots are off the Elm St. bridge in the center of town, the Route 10 bridge over Mirey Brook as it enters the Ashuelot, and various spots along Westport Rd. Ice fishing is possible in the backwater behind AC Lawrence where perch are caught.

Hinsdale benefits from the confluence with the Connecticut River. Here the Ashuelot is frequented by many fishermen who access the River from the former railroad trestle spanning the Ashuelot. Walleye, bass, bullheads and perch are caught at this spot.

Because of the accessibility of much of the River by roads, fisherman can be spotted enjoying their sport throughout the River's course, and are not limited to the areas mentioned above

(b) Boating

Describe any significant recreational boating opportunities which are present on the river.

For small sailing vessels and motorboats, the Ashuelot River provides opportunity to enjoy the open water and forested scenery. Ashuelot Pond and Surry Mountain Lake both provide boat ramps. Small motors are usable on the middle section of the Ashuelot River, while canoes and kayaks are most frequent on the unpounded sections. The Ashuelot River is listed in the AMC New England Canoeing Guide (1971) as a "beautiful tributary of the Connecticut". The upper reaches are described as rapid and rough, the middle largely winding and placid, and the last few miles providing "some of the wildest running in New Hampshire". Thus the Ashuelot provides a variety of canoeing to suit different skills and interests. The whitewater canoeists and kayakers seek the pace of the rapids in the spring when water is high. During the spring and summer the middle reaches can be enjoyed by the flat water canoeists. The New England White Water River Guide by Ray Gabler also lists the upper and lower reaches as offering good white water challenges.

Passable in high water is a run from 2 miles above Marlow to the town of Marlow. For 2 miles below Marlow the run is easy, but requiring precise boat control through some of the rock patterns that are present here. If the gauge reading at Gilsum is over 5.0, the rapids half way to Gilsum blend together to form one long Class IV rapids. The canoeist must take out before the Arch Bridge and the Gorge in Gilsum. The accessibility to the road offers the opportunity for portage around the gorge to the rapids below. The 6 mile run from the Gorge to Surry is a very popular run for kayakers as well as white-water canoeists. It has 4 miles of continuous Class II-III rapids with a spectacular drop at Shaws Corner. Here the River turns left over a ledge forming a Class IV rapid in heavy water. From there the pace

slows and the rapids are gentle as the River approaches Surry Mountain Dam.

From Surry to Keene, to West Swanzey, to Winchester, the River meanders and slowly moves through the widened river valley. Below the West Swanzey dam, the River provides the perfect depth and pace for practicing poling skills. As it enters Westport, about 1/2 mile below the Slate Covered Bridge, the River's pace picks up a bit, but this is easily run at ordinary water stages. There is a portage required at the West Swanzey dam as well as the dam in Winchester.

Three miles outside Winchester begins a severe (Class V) white-water run. The canoeist must be prepared to portage the dams that occur on this reach, but because the River is wider and has a larger discharge, it is considered good practice on one of New England's larger white water river sections. This is pursued by kayakers and expert white-water canoeists with caution in high water. Below the last dam in Hinsdale, the rapids diminish through the last mile to the Connecticut.

(c) Other Recreational Resources

List any other recreational areas, facilities, or opportunities on the river or in the river corridor. Indicate ownership, if known.

<u>Recreational Area</u>	<u>Ownership</u>	<u>Location</u>
-Pillsbury State Park, State of New Hampshire, Washington- Contains the headwaters of the Ashuelot River. Located on 9,000 acres, the area has 20 primitive campsites, and more than 20 miles of hiking trails. Fishing is permitted on all seven ponds located within the park, and boats can be launched from the campsites. There are numerous picnicking sites.		
-Ashuelot Pond, Town of Washington, Washington- Boating, fishing and swimming are among the summer activities at this pond. Winter activities include skiing, snowmobiling, and ice fishing. Birding and nature study are other opportunities located here.		
-"Baptism Beach", Town of Marlow, Marlow- Once the site where baptisms were performed, now functions as town beach.		
-Ralph Jernberg Ballfield, Town of Gilsum, Gilsum- Adult and little league diamonds used throughout the baseball season.		
-Surry Mountain Dam, US Army Corps of Engineers, Surry- Part of a network of flood control projects in the Connecticut River Basin, this area provides not only views of the dam in action during spring snowmelt, but recreational experiences as well. Swimming, boating, picnicking, hiking, fishing, and hunting are all accepted uses of this facility.		

- Surry Mountain Campground, private enterprise, Surry-
Fifty three campsites available adjacent to Surry
Mountain Lake. Facilities include water and showers,
as well as access to recreation at Surry Mountain Lake.
- Bretwood Golf Course, private enterprise, Keene-
"Championship designed" 27 hole golf course within the
river corridor.
- Underwood and Hanna Ballfields, City of Keene, Keene-
Located off upper Court St. on land owned by the
American Legion, fields maintained by the City of
Keene.
- Ashuelot River Park, City of Keene, Keene-
Forty-six plus acres extending along the River with an
arboretum, hiking trails, benches, gazebo and
picnicking area.
- Keene Forestry Park, City of Keene, Keene & Swanzey-
This 12.4 acre parcel was once used as a nursery for
the City of Keene to grow trees. Bordering wetlands,
it now serves as a natural area for walking.
- Keene State College (KSC) Athletic Fields, KSC, Keene-
Located adjacent to the River are the various soccer
and lighted ballfields utilized by the college, with
footpaths connecting them to the main campus. There
are plans to create nature trails from near Winchester
St. to these fields south of Rte. 101.
- Mount Cresson, Town of Swanzey, Swanzey-
Hiking, hunting, and nature study, 135 acres.
- Dickinson Forest, Society for the Protection of NH Forest,
Swanzey-
Hiking and nature study, 65 acres.
- Brown Field, Town of Swanzey, W. Swanzey-
Lighted ballfield used by various area leagues spring
through fall.
- Wantastiquet-Monadnock Greenway, proposed, Winchester-
Still in conceptual stages of planning is this marked foot
trail which would connect Wantastiquet State Forest and
Pisgah State Park with Franklin Mountain, Rhododendron State
Park, and ultimately with Mount Monadnock via the Monadnock-
Metacomet Trail. The path would cross the Ashuelot River
either at the Coombs Covered Bridge, or the Elm St. Steel
Truss Bridge.
- Gardiner Mountain Town Forest, Town of Winchester, Winchester-
This 180 acre Town Forest is located on the
southwestern slope of Gardiner Mountain and enters into
the eastern river corridor. It includes the Winchester
Nature Walk which begins just off Route 10 near the
Water Works, and is composed of six stations described
in a pamphlet available at the trailhead.

- Forest Lake Campground, Richard & Norma Secord, Winchester-
One hundred and fifty campsites located on land adjacent to Forest Lake. Facilities include water, showers, boating, fishing, swimming, and a recreation hall.
- ELM Community Center, Town of Winchester, Winchester-
Named for the mother (Ellen Lambert Murphy) of former governor Francis Murphy, this center provides a place for public and organized group meetings, plays, and bazaars. Also various forms of recreation are held on the grounds: duck pins, tennis, softball and baseball, playground activities, and ice skating.
- Pisgah State Park, State of NH, Winchester & Hinsdale-
Entering into and adjacent to the river corridor is this 13,400 acre state park. Pisgah Reservoir Trailhead is located here off Route 119 on the north bank. Hiking, nature study, hunting, skiing, ice skating, snowmobiling, and historical sojourning are all available in this extensive resource.
- Heritage Park, Town of Hinsdale, Hinsdale-
Located within the river corridor, this park is used by residents and visitors alike. Music is held in the outdoors on Friday nights during the summer, and fireworks are displayed on the Fourth of July. The park has facilities for picnicking, a ballfield, tennis courts and horseshoe pits.

Rock climbers have been noted to practice their art of rappelling on the cut granite blocks of bridge abutments in the river corridor. With safety lines and assorted gear, rock climbers use these areas for instruction and training.

Bicycling is a popular activity on the roads adjacent to the River both in the upper reaches as well as in the lower reaches. The Keene Chamber of Commerce publishes a bicycling guide describing an "Ashuelot River Bike Tour", and Adolphe Bernotas has included the "Swanzy Covered Bridges" (18.3 miles), and the "Surry Mountain-Gilsum" (22.5 miles) tours in the book 30 Bicycle Tours in New Hampshire (1991).

The Ashuelot River Bike Tour begins in Keene at the Swanzy town line and intermittently provides glimpses of the River along Matthews Road, Sawyers Crossing Road, and Eaton Rd. to West Swanzy. Two covered bridges are passed through on this portion of the route. From W. Swanzy, Homestead Highway can be taken to Westport where the third covered bridge is seen. From Westport, the bicyclist crosses Route 10 and continues on Old Westport road, through a fourth covered bridge towards a landscape of farms, wetlands and river. Arriving in the center of Winchester, the bicyclist comes in view of the historic steel truss bridge still in use today. Crossing Rte 119, the River remains in view while bicycling down Old Ashuelot Rd to the covered bridge in Ashuelot. A brief tour on Rte. 119 east will return the bicyclist to Back Ashuelot Rd. on the northern bank of the River

to return to near the center of Winchester. Rte. 10 or Old Westport Rd. can be taken on the return trip, each offering different views of the River and its corridor.

Frequently bicyclists will tour the upper reaches of the River beginning in Keene and following Court St. to Rte. 12A into Surry, and then into Gilsum, and Marlow. In Keene the River is viewed intermittently until Surry where the River and the road run adjacent to each other. This relationship provides a pleasing experience during a bike tour, as well as an opportunity to rest and cool off in the River's waters. Once in Gilsum, the bicyclist may continue on Route 10 into Marlow, again with the River in view for the majority of the trip. The length of this trip is dependent on the bicyclist, with the point of origin determined by the individual. An alternative is to take Rte 10 south from Gilsum on the return to Keene. This would allow the opportunity to stop at Pot Holes and Bears Den State Forest for a brief hike as well.

A more leisurely bike tour is the path in Ashuelot River Park in Keene. This path, shared with hikers, connects with the bike path at upper Court St. A bridge has been constructed in the park, over the Ashuelot River, specifically for use by hikers and bicyclists .

(d) Access

List any existing public access sites location along the river. Include the type of access (ex., canoe only) and related facilities (ex., parking). Include ownership, if known.

<u>Location</u>	<u>Type of Access</u>	<u>Related Facilities</u>
Washington--Pillsbury State Park,	boats may be launched from the campsites.	
Washington--Ashuelot Pond,	boat ramps located at the northern and western shores of the pond.	
Marlow--boat landings located at Baptism Beach and at the northern end of Big Pond.		
Gilsum--proximity of the road throughout much of the River's course in Gilsum allows river access by cartop boats feasible where pull-offs allow for parking of the cars. There is no formal public access.		
Surry--Surry Mountain Lake has a boat ramp and large parking area. Informal access for cartop boats occurs where the River is close to the road. One well used site is located at E. Surry Rd. below Surry Mountain Dam. There is limited parking here and good cartop boat access.		
Keene--Informal access with parking for cartop boats is located at the American Legion on Court St., near the ballfield. Ashuelot River Park provides parking and small boat access above the Faulkner Colony Dam. Below the dam is informal access for cartop boats with		

parking on private property, and at Martel Court there is river access where there is some pull-off space for a car or two.

Swanzey--Informal access for cartop boats at the Cresson Covered Bridge and the West Swanzey Covered Bridge. There is limited off road parking at the Cresson Bridge, and paved parking at the West Swanzey Bridge. Both sites are privately owned but historically used as river access.

Winchester--There is no official public access to the River in Winchester, however, there are various pull-offs along Westport Rd. where cartop boat access is present. Other informal access is at the covered bridge in Ashuelot and pull-offs along Rte. 119, Back Ashuelot Rd., and Old Ashuelot Rd.

Hinsdale--No formal boat access, but white water canoeists and kayakers often find locations in Hinsdale to take out after their whitewater tour.

5. Other Resources

(a) Scenic Resources

Briefly describe any significant scenic focal points along the river. Indicate the location of significant views to and from the river.

The River provides a scenic experience throughout its course. Travelling on the River, a new perspective is gained to the otherwise landlocked adventurer. With most banks vegetated throughout, the changing foliage and blooms create a seasonal transformation. The River view offers glimpses of birds and mammals, forested mountains and hillsides, rocks and rapids, and open farm fields, leaving the observer often unsuspecting of the development that lies beyond the river corridor. There also are numerous locations to sit on a rock near or in the River and enjoy the beauty and tranquility offered.

When travelling on land, the River becomes integral in the scenic views of forest, mountain and fields. Wherever the road follows the River's course, the River lends a refreshing view of Southwestern New Hampshire. The Official New Hampshire Visitor's Guide lists all of Route 10 from Marlow to Winchester as a scenic drive, the River winding along much of this way. Also listed for viewing are the five covered bridges crossing the Ashuelot in Swanzey and Winchester.

Areas of particular scenic noteworthiness as identified are:
Washington--

- Sweeping views of Sunapee and surrounding mountains from the shores of Butterfield and May Ponds at Pillsbury State Park.
- The forested hillsides as viewed from Ashuelot Pond.

Marlow--

- A postcard image of the village of Marlow reflects in Village Pond.
- The view of Marlow Hill from the River.
- Outside the corridor, but nearby, is the "Marlow Profile" in ledge on Marlow Hill.

Gilsum--

- Stone Arch bridge and view down into the gorge.
- The steepness of the valley walls, along this stretch of the River along Surry Rd., affords a sense of quiet shelter when visiting the river banks here.
- View south of Hammond Hollow from the high flats just above "Dead Man's Curve" on Surry Rd.

Surry--

- Sweeping view of Surry Mountain and surrounding hills from the top of Surry Mountain Dam, as well as from the beach and picnic areas at the Surry Mountain Lake.

Keene--

- Openness of fields at Bretwood Golf Course allow for clear views of surrounding hillsides from the River, and a sense of the broadening flood plain.
- Stone Arch Bridge in Keene with park.
- Ashuelot River Park arboretum and Faulkner Colony dam.

Swanzey--

- Covered bridges: Cresson in Swanzey Center, Thompson in W. Swanzey with dam (view looking upstream from the bridge is very picturesque with West Hill in the background), Slate Bridge in Westport.
- views of Mt. Cresson from the River.
- views from the backwater/wetland areas near Dillant-Hopkins Airport with Mount Huggins rising in the background.
- view of Mount Monadnock from Route 10 with the River winding in the foreground.
- view of Franklin and Rattlesnake Mountains across the farm fields in area near the new Denman Thompson Bridge in West Swanzey.
- view of the rapids in the village of Westport from Westport Rd.

Winchester--

- Coombs Covered Bridge on Old Westport Rd.
- The River along Old Westport Rd. as it winds through farmland and wetlands frequented by Canada Geese and other waterfowl. This stretch is enjoyed from the road as well as the River.
- Views of Franklin, Gardiner, and Rattlesnake Mountains from both the River and Old Westport Rd.
- View of the River as it flows along Old Ashuelot Rd. and Back Ashuelot Rd.
- Ashuelot Covered Bridge with its separate walkway, and a park bench near the River.

Hinsdale--

-Mouth of the Ashuelot, views upstream and downstream from the railroad trestle. Openness of the land affords long views of fields and hillsides upstream, views of the Connecticut River downstream.

(b) Land Use

Briefly describe the type and location of significant developments within the river corridor, including roads, utility crossings, bridges, commercial and industrial developments, solid waste management facilities, and residential developments. Describe the type and location of any proposals for major developments within the river corridor.

Washington/Lempster--

Pillsbury State Park is at the headwaters of the Ashuelot. The land use is mainly forested as the River travels through Lempster and returns to Washington at Ashuelot Pond. Here there is thickly settled housing located on the northeastern and southwestern shores of the pond. The land resumes its forested nature after the pond and as the River enters Marlow.

Marlow--

The forested corridor continues until a small farm field near the village. The village is centered around Village Pond. The River flows under Route 10 and over a dam here, then continues with wetlands and forest for the majority of the corridor. Residential development with forested hillsides in the background dot the road which follows the River's course. Four gravel pits and a small hydroelectric dam are located in this stretch.

Gilsum/Sullivan--

The prevalent land use entering Gilsum is forest, with housing more dense as the River reaches the Village. Approximately 1,300 feet of the River flows through Sullivan in the eastern corridor where the land is steep and forested. The River turns more westerly after the Village of Gilsum, and the forested hillsides predominate with occasional housing scattered along the roadside. The road continues to follow the River, which flows under four bridges throughout Gilsum. The Gilsum transfer station is located in the northern corridor shortly after the bridge at Hammond Hollow. Forests continue as the predominate land use as the River rolls into Surry.

Surry--

The floodplain broadens and farmland predominates on the western bank. The village of Surry is located just outside the 1/4 mile corridor. Sand and gravel pits predominate adjacent to the village on this western bank. The full eastern bank of the River is Surry

Mountain which remains forested. The River flows into Surry Mountain Recreational area to the US Army Corps dam. From here the land is forested as it enters Keene. There is a small bridge where East Surry Road crosses the Ashuelot, and a suspended foot bridge just after the River turns southward at Shaws Corner.

Keene--

Bretwood Golf Course is the predominate land use as the River enters Keene. The land is open as the River runs past the pumping station for the Keene wells on the western bank, but is forested on the eastern bank. East Surry Road runs in the corridor parallel to the River. The River flows under the Stone Arch Bridge and begins its course through its most populated reach, the City of Keene. Interspersed between the housing within the corridor through the city are natural areas, Ashuelot Park the largest such expanse along the river banks. Cheshire Medical Center and Keene State College are located in this reach. The land use is commercial mixed with residential. The River flows under 8 bridges after the Stone Arch, and power lines cross its path twice.

Swanzey--

Entering Swanzey the River flows through a mix of wooded and wetland habitats. Immediately south of Keene, off the east bank of the River, is located Dillant-Hopkins Airport and the Keene WWTF. This land remains open, with a wooded river corridor and extensive wetlands, and is otherwise undeveloped for over two river miles. Within the western corridor is Matthews Road which is residential, parallels the River, and is sporadically in view. Forested Mount Cresson is also along this road, an airport beacon towers on its peak. Continuing downriver, on the west bank is open farmland followed by Yale Forest and Dickinson Forest on the east bank. Adjoining Dickinson Forest is the open field of the "Muster" parcel and hayfields. The Swanzey Recycling Center is located inland behind the Muster parcel. The River begins to enter the thickly settled village of West Swanzey, with mixed commercial use. The Swanzey WWTF is located here. At this point the land use becomes agricultural on both banks, with housing further away from the River until the village of Westport where housing again predominates. Mixed commercial use is located on Rte. 10 which is within the western corridor. The River flows under two covered bridges, one steel truss bridge, and two other road bridges in this stretch. Power lines cross the River once but are in view twice.

Winchester--

Entering Winchester the river corridor is mixed residential with large parcels of farmland interspersed. The river banks are largely vegetated with trees and shrubs. Before reaching the populated center of Winchester is a long stretch of farmland with wetlands interspersed, alternating with large forested tracts. Extending into the river corridor is the 180 acre town forest which includes the southwest slope of Gardiner Mountain. The River then flows through the center of Winchester which is thickly settled with a residential/commercial/industrial mix. South of the center of town is another wetland area where Mirey Brook enters the Ashuelot. Immediately after Mirey Brook on the west bank is the Winchester WWTF. South of the 119 bridge is part of a 189 acre parcel of conservation land that, according to the Winchester Conservation Commission, includes a prime wetland area. As the River bends westward, the River corridor continues to be heavily forested on the southern bank with residences interspersed. A few small farm fields are also located immediately after the turn. On the northern bank the River eventually runs parallel to Route 119, which is mixed residential/commercial development with forested hillsides and farm fields behind. After the village of Ashuelot the presence of two industries dominates the river corridor, with forested hillsides providing backdrop as the River flows into Hinsdale. The River flows under five bridges in Winchester, with Rte 119, Westport Rd., and Old Ashuelot Rd. following the River within the corridor. The former railroad bed also is within the river corridor throughout Winchester. Power lines cross the River once near the Winchester/Hinsdale town line.

Hinsdale--

The river corridor is largely forested as it enters Hinsdale, with one farm field located within the northern corridor east of Route 63. Here the land use becomes largely a residential/commercial mix until after the Route 63 bridge, where a large farm field dominates the southern corridor and residences intersperse the northern. Also in the northern corridor is the Hinsdale WWTF. As the River approaches the Connecticut River, the land is open fields and forest. The River flows under three bridges in Hinsdale, one being the old railroad trestle near the mouth of the Ashuelot. Power lines cross the River once within the last mile of the River.

(c Land Use Controls)

Identify the municipalities with existing master plans and zoning ordinances within the river corridor. Identify existing or proposed land use controls which affect the river and the river corridor (ex., zoning, easements, subdivision regulations).

Washington--

- Land Use Ordinance--requires minimum 200 foot frontage on waterfront, 50 foot setback from shoreline; cluster housing with open space allowed.
- Subdivision Regulations/Site Plan Review

Lempster--

- No zoning ordinance

Marlow--

- Master Plan
- Floodplain ordinance
- Septic systems required to have 100 foot setback from surface water.
- Subdivision Regulations/Site Plan Review
- Wetlands Conservation District

Gilsum--

- Master Plan
- Floodplain Ordinance
- Subdivision Regulations/Site Plan Review

Sullivan--

- Zoning Ordinance. No buildings permitted within 50 linear feet of the normal high water mark of surface waters; no building, leach field, fence, or road may be constructed within 15 feet elevation above the Ashuelot River.
- Subdivision Regulations and Site Plan Review being formulated.

Surry--

- Master Plan
- Subdivision Regulations/Site Plan Review

Keene--

- Master Plan
- Open Space Master Plan - goals to secure permanent protection of wetlands, discourage further development within the floodplain, establish additional wildlife and recreational corridors and scenic buffers along rivers and streams. Pursue the creation of forest corridors and greenways along the river system.
- Floodplain Ordinance
- Floodplain Master Plan which recommends adoption of no-net-loss of flood storage performance standard.
- Subdivision Regulations/Site Plan Review

Swanzey--

- Master Plan
- Subdivision Regulations/Site Plan Review--allows for cluster housing with open space.

- Floodplain Ordinance
- Wetlands Conservation District--requires 125 foot setback for septic systems
- Water Resource Management and Protection Plan

Winchester--

- Master Plan
- Subdivision Regulations/Site Plan Review--allows for planned residential developments with open space.
- Floodplain Ordinance
- Wetlands Ordinance

Hinsdale--

- Master Plan
- Subdivision Regulations/Site Plan Review
- Floodplain Districts/Ordinance
- Open Space Provisions

APPENDICES

LANDOWNER QUESTIONNAIRE

April, 1992

Number _____ Name _____
 (Leave blank) Mr. Mrs. Last, First, MI (OPTIONAL)
 Address _____ Town _____ State _____ Zip _____

The first questions refer to your property on the Ashuelot River.

- 1 Do you currently own property on the Ashuelot River? ☐ Y ☐ N
2. In which town is your riverfront land located?
- 2a. In which town are you a resident?
- 2b. Approximately how many acres of riverfront land _____ and how many feet
frontage _____ do you own?
- 2c. How long have you owned your riverfront property?
3. Did the River play a role in your decision to purchase your property?
☐ Y ☐ N.
 If yes, check the most important reason:
- | | |
|--|--|
| A. <input type="checkbox"/> scenery | C. <input type="checkbox"/> economic asset |
| B. <input type="checkbox"/> recreation | D. <input type="checkbox"/> water withdrawal |
| | E. <input type="checkbox"/> other |

What is the current use of your riverfront property? (Please check the three most important uses).

- | | |
|--|--|
| A. <input type="checkbox"/> Full time residence | F. <input type="checkbox"/> Retail business |
| B. <input type="checkbox"/> Second or vacation home | G. <input type="checkbox"/> Lodging/Restaurant |
| C. <input type="checkbox"/> Rental property | H. <input type="checkbox"/> Industry |
| D. <input type="checkbox"/> Farming | I. <input type="checkbox"/> Recreation |
| E. <input type="checkbox"/> Forestry | J. <input type="checkbox"/> Investment |
| K. <input type="checkbox"/> Other (Please specify) _____ | |

5. What plans do you have for your property? (Please check up to three answers).

- | | |
|--|--|
| A. <input type="checkbox"/> Continue present use | E. <input type="checkbox"/> Industrial development |
| B. <input type="checkbox"/> Build residence | Specify future use by: |
| C. <input type="checkbox"/> Subdivide | F. <input type="checkbox"/> Deed restriction |
| D. <input type="checkbox"/> Commercial development | G. <input type="checkbox"/> Conservation easement |
| H. <input type="checkbox"/> Other (Please specify) _____ | |

6. Do you permit public access to the river across your property? ☐ Y ☐ N

- | | |
|--|--|
| A. <input type="checkbox"/> Flooding | H. <input type="checkbox"/> Recreation abuses |
| B. <input type="checkbox"/> Excessive erosion | I. <input type="checkbox"/> Loss of wetlands |
| C. <input type="checkbox"/> Water pollution | J. <input type="checkbox"/> Loss of wildlife habitat |
| D. <input type="checkbox"/> Loss/damage hist./cultural sites | K. <input type="checkbox"/> Loss of fish habitat |
| E. <input type="checkbox"/> Loss of farmland | L. <input type="checkbox"/> Environmental area loss |
| F. <input type="checkbox"/> Loss of public access | M. <input type="checkbox"/> River edge development |
| G. <input type="checkbox"/> Recreation overuse | N. <input type="checkbox"/> Other (Please specify) |
-

The final questions relate to possible River protection measures.

11. Do you believe that any of the following general measures should be taken to protect the river and the special opportunities it offers to this area? (Please check as many as apply)

- | | |
|--|---|
| A. <input type="checkbox"/> Protect free-flow of river | G. <input type="checkbox"/> Provide public access |
| B. <input type="checkbox"/> Limit resident shore development | H. <input type="checkbox"/> Provide recreation facilities |
| C. <input type="checkbox"/> Limit commercial shore development | I. <input type="checkbox"/> Protect wildlife habitat |
| D. <input type="checkbox"/> Limit industrial shore development | J. <input type="checkbox"/> Protect fisheries habitat |
| E. <input type="checkbox"/> Protect scenic areas in corridor | K. <input type="checkbox"/> No additional protection |
| F. <input type="checkbox"/> Improve water quality | L. <input type="checkbox"/> Other _____ |

12. Do you feel any of the specific steps listed below would be appropriate for river and river corridor protection? (Please check as many as apply)

- A. ☐ Stricter enforcement of local and state regulations related to water and wetlands.
- B. ☐ Minimum setback requirements for new construction.
- C. ☐ Floodplain protection regulations.
- D. ☐ Purchase of property in the river corridor (from willing sellers)
- E. ☐ Purchase of development rights in the river corridor.
- F. ☐ Voluntary easement donation program.
- G. ☐ Limit dam construction.
- H. ☐ No additional protection.
- I. ☐ Other (Please specify) _____

13. Do you feel that local governments should take action to protect the river in your community? ☐ Y ☐ N

14. Are you interested in learning more about the efforts of the Ashuelot River Nominating Committee to nominate the Ashuelot River for designation into the NH Rivers Management and Protection Program? ☐ Y ☐ N

Please include any additional comments you may wish to make.

ASHUELOT QUESTIONNAIRE (JULY 1992)

(160 responses of 946 sent)

1. Do you currently own property on the Ashuelot River?

Yes - 149

No - 9

no reply - 2

2. In which town is your riverfront land located.

2a Town residence

2b acres footage

2c time owned property

3. Did the river play a role in your decision to purchase your property?

Yes - 77 (48%)

No - 70 (44%)

No reply - 13

If yes, check the most important reason:

A. Scenery - 69 (43%)

B. Recreation - 30 (19%)

C. Economic asset - 11 (7%)

D. Water withdrawal - 2 (1%)

E. Other -

Inherited

Impact on access

Environmental protection/keep area from development

Tax lien

Absence of noise

Vacation property

Privacy

Maintain property values

No reply - 41 (26%)

4. What is the current use of your riverfront property?

- A. Full time residence - 70 (44%)
- B. Second or vacation home - 39 (24%)
- C. Rental property - 12 (8%)
- D. Farming - 5 (3%)
- E. Forestry - 14 (9%)
- F. Retail business - 5 (3%)
- G. Lodging/restaurant - 1
- H. Industry - 6 (4%)
- I. Recreation - 45 (28%)
- J. Investment - 37 (23%)
- K. Other - 13
 - Scenery
 - Under Current Use as wildlife & wetland
 - Open land
 - Storage/barn
 - Warehouses
 - No use/area too small
 - Light manufacturing
 - Enjoying river as is
 - Wildlife sanctuary
 - Quality/family time
 - Parent occupies
 - Town holding
 - 6 months Winchester/6 months Florida
 - No reply - 20 (13%)

5. What plans do you have for your property?

- | | |
|-------------------------------------|---|
| A. Continue present use - 142 (89%) | H. Other - 14 |
| B. Build residence - 12 (8%) | Sell - 8 (5%) |
| C. Subdivide - 3 (2%) | Add a home for family - 1 |
| D. Commercial development - 3 | Plant Christmas trees - 1 |
| E. Industrial development - 0 | Leave as is/no plans - 3 (2%) |
| Specify future use by: | Donation to private wildlife foundation - 1 |
| F. Deed restriction - 2 | No reply - 15 (9%) |
| G. Conservation easement - 2 | |

6. Do you permit public access to the river across your property?

Yes - 36 (23%)

+1(snowmobiles only)

No - 98 (61%)

No reply - 25 (16%)

7. Have you been affected by any of the following problems related to public use of the river?

A. Failure to respect "no trespassing signs" - 16 (10%)

B. Littering - 36 (23%)

C. Noise - 23 (14%)

D. Vandalism - 15 (9%)

E. Overuse - 5 (3%)

F. Fire - 2 (1%)

G. Rowdy behavior - 10 (6%)

H. Other - 11

Motorboats - 2

Target shooting - 1

Hunting - 1

Landfill expansion - 1

Smell - 1

Problems with town - 1

Snowmobile damage - 1

Squatter - 1

Theft - 1

Muskrat trapping - 1

I. Have you restricted as a result?

Yes - 2 (1%)

No - 13 (8%)

No reply - 145 (91%)

8. Do you think the river contributes to the quality of life in your community?

Yes - 148 (93%)

No - 12 (7%)

If yes, how?

- | | |
|---|---|
| A. Open space - 88 (55%) | I. Scenic values - 132 (83%) |
| B. Agriculture - 25 (16%) | J. Free-flowing water - 87 (54%) |
| C. Water supply - 55 (34%) | K. Shoreline development - 9 (6%) |
| D. Wildlife and waterfowl habitat - 126 (60%) | L. Historical/cultural sites - 50 (31%) |
| E. Wetland ecosystems - 91 (57%) | M. Other - 6 |
| F. Swimming - 72 (45%) | Hydro power - 4 (3%) |
| G. Boating - 105 (66%) | Indian dam - 1 |
| H. Fishing - 94 (59%) | Hunting - 1 |

9. How important is it to you that each of the following characteristics associated with the Ashuelot River and its corridor are protected?

	Very Important	2	3	4	Very Unimportant
A. Open space	105 (67%)	13 (8%)	19 (12%)	5 (3%)	3 (2%)
B. Ind. development opportunity	13 (8%)	3 (2%)	19 (12%)	17 (11%)	82 (51%)
C. Comm. development opportunity	10 (6%)	8 (5%)	24 (15%)	11 (7%)	79 (49%)
D. Res. development opportunity	15 (9%)	23 (14%)	29 (18%)	21 (13%)	45 (28%)
E. Hydroelectric power opportunity	25 (16%)	15 (9%)	34 (21%)	9 (6%)	60 (61%)
F. Fishing access	57 (36%)	32 (20%)	32 (20%)	11 (7%)	7 (4%)
G. Boating access	64 (40%)	35 (22%)	25 (16%)	11 (7%)	5 (3%)
H. Swimming access	65 (41%)	32 (20%)	26 (16%)	9 (6%)	5 (3%)
I. Scenic quality	127 (79%)	18 (11%)	10 (6%)		3 (2%)
J. Water quality	124 (78%)	13 (8%)	8 (5%)		4 (3%)
K. Free-flowing water	99 (62%)	15 (9%)	18 (11%)	4 (3%)	9 (6%)
L. Wildlife and waterfowl habitat	115 (72%)	17 (11%)	12 (8%)		4 (3%)
M. Fisheries habitat	96 (60%)	21 (13%)	19 (12%)	4 (3%)	3 (2%)
N. Wetland ecosystems	94 (59%)	16 (10%)	19 (12%)	4 (3%)	4 (3%)
O. Other					
Privacy	1				
Protection for land owners	1				
Property rights	1				
Hiking	1				
Conservation of park land	1				
Protection from DOT salt dumping at culvert					
Gouging of ditches along river	1				
Fish ladders	1				

10. Have you noticed any of the following problems along the river?

- | | |
|--|---|
| A. Flooding - 45 (28%) | M. River edge development - 21 (13%) |
| B. Excessive erosion - 32 (20%) | N. Other - 7 |
| C. Water pollution - 68 (43%) | Cleanliness of bordering properties - 1 |
| D. Loss/damage historical cultural site - 9 (6%) | Trash - 1 |
| E. Loss of farmland - 6 (4%) | Acid rain - 1 |
| F. Loss of public access - 8 (5%) | Landfills - 1 |
| G. Recreation overuse - 11 (7%) | Tree cutting - 1 |
| H. Recreation abuses - 27 (11%) | Weeds - 2 (1%) |
| I. Loss of wetlands - 11 (7%) | O. No comment - 26 (16%) |
| J. Loss of wildlife habitat - 29 (18%) | |
| K. Loss of fish habitat - 40 (25%) | |
| L. Environmental area loss - 16 (10%) | |

11. Do you believe that any of the following general measures should be taken to protect the river and the special opportunities it offers to this area?

- A. Protect free-flow of water - 111 (69%)
- B. Limit resident shore development - 77 (48%)
- C. Limit commercial shore development - 115 (72%)
- D. Limit industrial shore development - 130 (81%)
- E. Protect scenic areas in corridor - 128 (80%)
- F. Improve water quality - 133 (84%)
- G. Provide public access - 38 (24%)
- H. Provide recreational facilities - 32 (20%)
- I. Protect wildlife habitat - 127 (80%)
- J. Protect fisheries habitat - 120 (75%)
- K. No additional protection - 6 (4%)
- L. Other - 10 (6%)
 - No motor boats - 1
 - No bird hunting - 1
 - Protect against out of watershed claims on water - 1
 - Protect land owners' property rights - 1
 - Maintain/improve quality of environment - 1
 - Improve enforcement of ATV and motorboat regulations - 1
 - Raise level of awareness of importance of river resources - 1
 - Develop existing dams for hydro power - 1
 - Have Surry Lake remain open to public later into the fall - 1
 - Clean up waste dumps - 1
- No reply - 3 (2%)

12. Do you feel any of the specific steps listed below would be appropriate for river and river corridor protection?

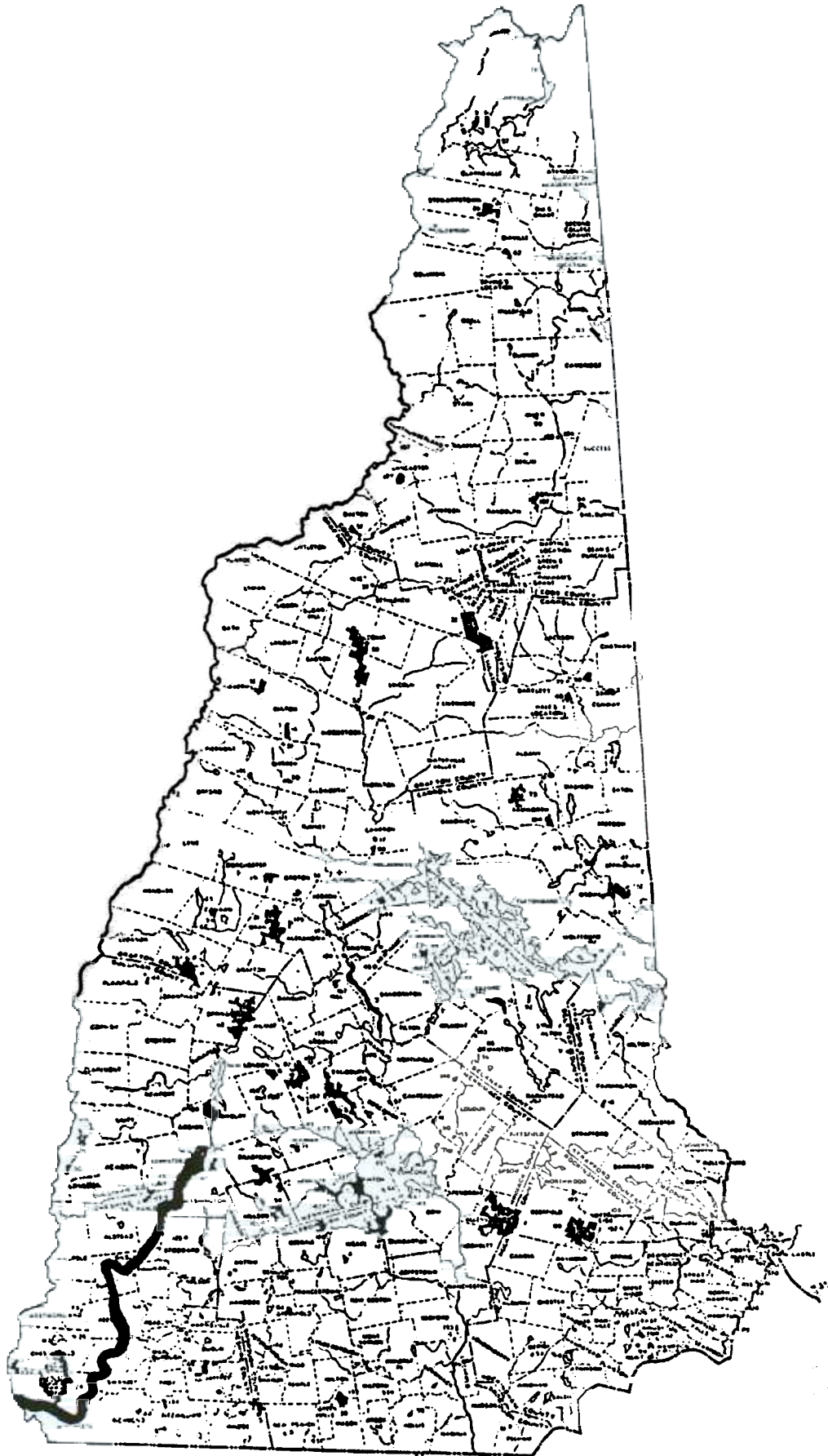
- A. Stricter enforcement of local and state regulations related to water and wetlands - 76 (48%)
- B. Minimum setback requirements for new construction - 89 (56%)
- C. Floodplain protection regulations - 71 (44%)
- D. Purchase of property in the river corridor (from willing sellers) - 61 (38%)
- E. Purchase of development rights in the river corridor - 54 (34%)
- F. Voluntary easement donation program - 50 (31%)
- G. Limit dam construction - 73 (46%)
- H. No additional protection - 3 (2%)
- I. Other - 5
 - Restrict lowering of lake to every 5 years - 1
 - Enforce present laws - 1
 - Allow river to flow free - 1
 - Stricter water pollution laws - 1
 - Limit public access - 1
- No reply - 5 (3%)

13. Do you feel that local governments should take action to protect the river in your community?

- Yes - 138 (86%)
- No - 28 (18%)
- Not sure - 1
- No reply - 8 (5%)

RIVER LOCATION

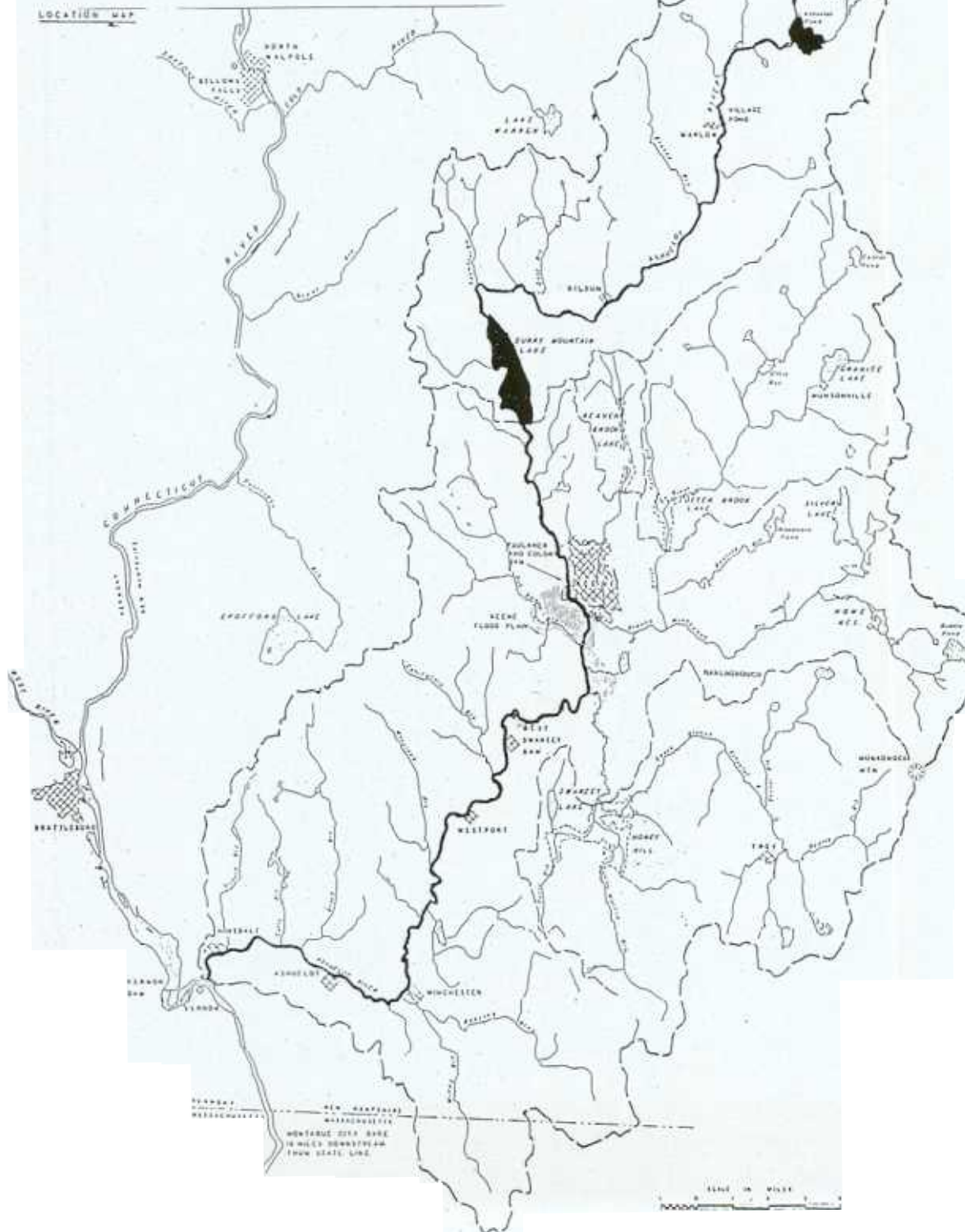
APPENDIX 8



ASHUELOT RIVER WATERSHED



LOCATION MAP



APPENDIX C

SPECIES OCCURRING IN THE ASHUELOT RIVER VALLEY

Adapted with local input from "Species in New Hampshire (Residents and Visitors)" by Nongame and Endangered Wildlife Program, New Hampshire Fish and Game Department.

BIRDS

Bittern, American	Grosbeak, Pine
Blackbird, Red-winged	Grosbeak, Rose-breasted
Blackbird, Rusty	Grouse, Ruffed
Bluebird, Eastern	Gull, Great Black-backed
Bobolink	Bull, Herring
Bobwhite	Gull, Ring-billed
Bufflehead	Harrier, Northern
Bunting, Indigo	Hawk, Broadwing
Canvasback	Hawk, Cooper's
Cardinal, Northern	Hawk, Red-shouldered
Catbird, Gray	Hawk, Red-tailed
Chickadee, Black-capped	Hawk, Sharp-shinned
Cormorant, Double-crested	Heron, Great Blue
Cowbird, Brown-headed	Heron, Green-backed
Creeper, Brown	Heron, Black-crowned night
Crow, American	Hummingbird, Ruby-throated
Cuckoo, Black-billed	Jay, Blue
Cuckoo, Yellow-billed	Junco, Dark-eyed
Dove, Mourning	Kestrel, American
Dove, Rock	Killdeer
Duck, American Black	Kingbird, Eastern
Duck, Ring-necked	Kingfisher, Belted
Duck, Wood	Kinglet, Golden-crowned
Eagle, Bald	Kinglet, Ruby-crowned
Egret, Great	Lark, Horned
Egret, Snowy	Loon, Common
Falcon, Peregrine	Mallard
Finch, House	Meadowlark, Eastern
Finch, Purple	Merganser, Common
Flicker, Northern	Merganser, Hooded
Flycatcher, Alder	Merganser, Red-breasted
Flycatcher, Great Crested	Mockingbird, Northern
Flycatcher, Least	Moorhen, Common
Flycatcher, Olive-sided	Nighthawk, Common
Flycatcher, Willow	Nuthatch, Red-breasted
Gnatcatcher, Blue-gray	Nuthatch, White-breasted
Goldeneye, Barrow's	Oriole, Northern
Goldeneye, Common	Osprey
Goldfinch, American	Ovenbird
Goose, Canada	Owl, Barred
Goose, Snow	Owl, Eastern Screech
Goshawk, Northern	Owl, Great Horned
Grackle, Common	Owl, Northern Saw-whet
Grebe, Pied-billed	Pheasant, Ring-necked
Grosbeak, Evening	Phoebe, Eastern

BIRDS (cont'd)

Pintail, Northern
Rail, Virginia
Raven, Common
Redpoll, Common
Redstart, American
Robin, American
Sandpiper, Solitary
Sandpiper, Spotted
Sapsucker, Yellow-bellied
Scaup, Lesser
Shrike, Northern
Siskin, Pine
Snipe, Common
Sora
Sparrow, American Tree
Sparrow, Chipping
Sparrow, Field
Sparrow, Fox
Sparrow, House
Sparrow, Savannah
Sparrow, Song
Sparrow, Swamp
Sparrow, Vesper
Sparrow, White-crowned
Sparrow, White-throated
Starling, European
Swallow, Bank
Swallow, Barn
Swallow, Cliff
Swallow, Rough-winged
Swallow, Tree
Swift, Chimney
Tanager, Scarlet
Teal, Blue-winged
Teal, Green-winged
Thrasher, Brown
Thrush, Hermit
Thrush, Swainsons
Thrush, Wood
Titmouse, Tufted
Towhee, Rufous-sided
Turkey, Wild
Veery

Vireo, Solitary
Vireo, Warbling
Vireo, Yellow-throated
Vulture, Turkey
Warbler, Bay-breasted
Warbler, Black-and-white
Warbler, Black-throated Blue
Warbler, Black-throated Green
Warbler, Blackburnian
Warbler, Blackpoll
Warbler, Blue-winged
Warbler, Canada
Warbler, Cape May
Warbler, Chestnut-sided
Warbler, Golden-winged
Warbler, Magnolia
Warbler, Mourning
Warbler, Nashville
Warbler, Palm
Warbler, Parula
Warbler, Pine
Warbler, Prairie
Warbler, Tennessee
Warbler, Wilson's
Warbler, Yellow
Warbler, Yellow-rumped
Waterthrush, Louisiana
Waterthrush, Northern
Waxwing, Bohemian
Waxwing, Cedar
Whip-poor-will
Widgeon, American
Wood-Pewee, Eastern
Woodcock, American
Woodpecker, Downy
Woodpecker, Hairy
Woodpecker, Pileated
Wren, Carolina
Wren, House
Wren, Marsh
Wren, Winter
Yellowlegs, Greater
Yellowthroat, Common

MAMMALS

Bat, Big Brown
Bat, Hoary
Bat, Silver-haired
Bear, Black
Beaver
Bobcat
Chipmunk, Eastern
Cottontail, Eastern
Cottontail, New England
Coyote
Deer, White-tailed
Fisher
Fox, Gray
Fox, Red
Hare, Showshoe
Lemming, Southern Bog
Mink
Mole, Hairy-tailed
Mole, Star-nosed
Moose
Mouse, Deer
Mouse, House
Mouse, Meadow Jumping
Mouse, White-footed
Mouse, Woodland Jumping
Muskrat

Myotis, Keen's
Myotis, Little Brown
Opossum, Virginia
Otter, River
Pipistrelle, Eastern
Porcupine
Raccoon
Rat, Norway
Shrew, Long-tailed
Shrew, Masked
Shrew, Pygmy
Shrew, Short-tailed
Shrew, Smoky
Shrew, Water
Skunk, Striped
Squirrel, Gray
Squirrel, Northern Flying
Squirrel, Red
Squirrel, Southern Flying
Vole, Meadow
Vole, Southern Red-backed
Vole, Woodland
Weasel, Long-tailed
Weasel, Short-tailed
Woodchuck

REPTILES

Racer, Northern Black
Snake, Eastern Garter
Snake, Eastern Milk
Snake, Eastern Smooth Green
Snake, Northern Brown
Snake, Northern Redbelly
Snake, Northern Ringneck
Snake, Northern Water
Stinkpot
Turtle, Common Snapping
Turtle, Eastern Painted
Turtle, Spotted
Turtle, Wood

AMPHIBIANS

Bullfrog
Frog, Green
Frog, Northern Leopard
Frog, Pickerel
Frog, Wood
Mudpuppy
Newt, Red-spotted
Peeper, Northern Spring
Salamander, Blue-spotted
Salamander, Four-toed
Salamander, Jefferson
Salamander, Northern Dusky
Salamander, Northern Spring
Salamander, Northern Two-lined
Salamander, Redback
Salamander, Slimy
Salamander, Spotted
Toad, Eastern American
Toad, Fowler's
Treefrog, Gray

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ASHUELOT 'A STRESSED RIVER' — Snow-laden trees line the Ashuelot River along River Road in Surry on Sunday.
Sentinel photo by MICHAEL MOORE

Program can protect Ashuelot, group says

Demands on Ashuelot River may be controlled through management and protection program

By ERIC ALDRICH
Sentinel Staff Writer

From Goshen to Hinsdale, dozens of interests compete for the Ashuelot River — water for hydroelectric power, for sewage-treatment plants, for paper mills, recreation and drinking water.

Its water must be clean enough, and the river's level high enough, to support everything from trout to turtlehead plants, from muskrat to mussels.

Balancing those interests and gaining some local control of the river are the goals of a committee, with representatives from all nine towns along the Ashuelot. The group hopes to make the river part of a state water-protection program.

The Ashuelot River Nominating

Committee is now gathering all sorts of information about the 50-mile-long river. By July, it should have enough information to nominate the Ashuelot formally for the N.H. Rivers Management and Protection Program.

The N.H. Legislature will ultimately decide whether to add the Ashuelot to the program. It accepted the Contoocook River and North Branch in Antrim last year, and is now considering the Connecticut River.

The program, born in 1988, now covers 250 miles along eight rivers. If the Connecticut River is added — the Senate has already voted to do so, and a yes vote is expected in the House, as well — that will double the number of river miles protected.

The program's supporters say it does two main things:

First, it sets standards for different sections of a river, classifying each section as natural, rural or community river. Each classification has different protection measures for water quality and quantity, boating, channel alterations, and construction of dams and solid-waste facilities.

Second, it establishes a local advisory committee that gives communities along the river more say in how it should be used.

"This nomination is really about controlling different interests in the Ashuelot River's water," said John C. Calhoun Jr., Gilsom's representative on the committee.

(See GROUP/Page 6)

Group wants to control demands on Ashuelot River

(Continued from Page One)

As the group digs up information about the river, it's finding that the Ashuelot is a stressed river," said Sharon F. Francis, the nominating committee's project director.

The dwarf wedge mussel puts heightened importance on the Ashuelot's nomination, she said. The mussel, which lives in the Ashuelot, "is like the canary in the coal mine," Francis said.

Without protection efforts soon, the mussel could vanish from the Ashuelot — one of only two known habitats in New England.

The mussel needs the right quality of clean water to survive, nothing the program could help protect, Francis said.

Plans for the river

Among other things making the nomination important, according to Calhoun and Francis, are plans in Massachusetts and the U.S. Army Corps of Engineers that would affect the Ashuelot.

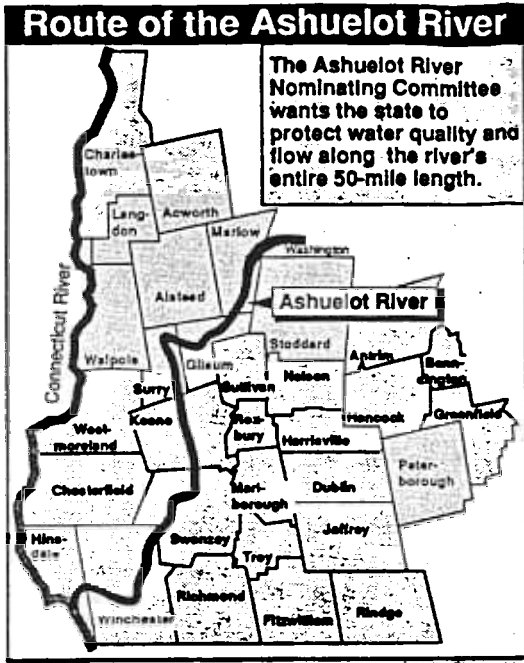
The Army Corps is looking at a reservoir behind its Otter Brook Dam in Roxbury. Otter Brook feeds the Ashuelot downstream from the dam.

The corps is now studying whether to expand the reservoir's inner size from its current 70 acres to 162 acres.

That might reduce the Ashuelot's flow in the summer, and Calhoun and Francis are concerned that could hurt fish and mussels — as well as humans who need a certain water level for hydro dams in Winchester and Hinsdale and for sewage-treatment plants in Swanton and Winchester.

On the Army Corps' shelves are 20-year-old plans to build one or two more flood-control dams on the Ashuelot, according to Calhoun and Francis.

One would be in Hammond Hollow, near the Surry-Gilesum line, backing up a reservoir into Gilesum.



SENTINEL graphics

Another would go near Money Hill in Swanton, backing up a reservoir into Richmond.

"Now these plans are quiet, there's no question about that," Calhoun said.

But they could become active if a massive flood occurred and residents asked the government to make sure it didn't happen again, he said.

Another major dam on the Ashuelot could affect many people and river depths, Calhoun said.

The impounded water behind the dam might be good for recre-

ation, Calhoun said, "but on the other hand, the river wouldn't be a wild, free-flowing river, which it is now. You'd have to weigh recreational uses vs. scenery, vs. relocating roads and houses, vs. flood control."

Francis doubts major flood-control dams would be allowed on the river if the Ashuelot were accepted in the protection program.

The Massachusetts Water Resource Authority is looking to tributaries of the Connecticut River — such as the Ashuelot — as a possible additional water source for dry

summer months.

According to Francis and Calhoun, the Massachusetts agency is looking for places upstream of the Connecticut where water from spring runoff and showers can be stored — such as behind Otter Brook and Surry Mountain dams.

Later in the year, that water could be used to keep river levels higher than normal, so Massachusetts could tap the Connecticut for more drinking water than it can now.

For instance, the water from Otter Brook and Surry Mountain would flow down the Ashuelot, and go into the Connecticut River in Hinsdale. Just downstream, in Northfield, Mass., some of the Connecticut's water would be pumped into the Quabbin Reservoir basin, which quenches Boston's thirst.

Not only would that cause drastic variations in the Ashuelot's water levels, but it would also set a dangerous precedent, Calhoun said — raising a vision of a Western-style war over water rights.

"Upstream towns should have a say in how their rivers are used," he said, and they should have it now, before it's too late.

The N.H. program would give Ashuelot River communities that say, by setting up a local advisory committee that would review such water-use proposals, Calhoun said.

"It would also say how much water stays in the river and how clean that water must be," he said.

"We don't want to be alarmists about this, but the fact is, there are some water-impoundment plans that include the Ashuelot River," Calhoun said. "... Citizens should be forewarned about this."

How it works

If the Ashuelot River is added to the state protection program, each river segment will be assigned to one of three categories: natural, rural and community. There's also a category that combines rural and

community. Each category has different protection measures.

Natural sections must be at least 5 miles long, with mostly undeveloped shoreline. Water there must meet the state's two highest standards for purity, suitable for drinking, swimming and fishing. Plans for these areas must preserve their natural conditions.

Not permitted here are new dams, pipes that would move water to another river, motorboats, or new landfills nearby. Any other trash-disposal facility would have to meet strict rules.

Rural sections must be at least 3 miles long and follow mixed areas of agriculture, forest and dispersed housing. Water quality must stay at least pure enough for swimming and fishing.

New dams are not allowed, but hydroelectric facilities can be added to existing dams. Water can't be transferred to another river basin. There are restrictions on new landfills or other waste facilities, but not as strict as those for natural segments. Motorboats within 100 feet of shore can't go more than 6 mph.

Community segments are at least 1 mile long and flow through developed and urban areas. Water quality must be at least pure enough for swimming and fishing, or have the potential to be restored to that level.

New dams for water supply, flood control, or hydroelectric production are allowed if they meet technical criteria. New landfills and solid waste facilities are allowed if they meet certain conditions.

The Contooscook River — which flows through Jaffrey, Peterborough, Hancock, Greenfield, Bennington and Antrim as it heads north to Concord — is already in the program, has various sections designated as rural and community.

The North Branch, which runs through Stoddard and Antrim on its way to Hillsboro, is rural and community. It's also in the program.

The Connecticut River, now being considered for the program, is mostly rural.

Francis said the nominating committee isn't sure yet which sections of the Ashuelot will get which designations.

If the Ashuelot is accepted, the coordinator of the state program, Katherine Ueland, will work with other state agencies to write a management plan for the river's corridor, with advice from a local advisory committee that's appointed by the commissioner of the N.H. Department of Environmental Resources.

also write a local management plan and ask towns and cities to adopt it.

And if anything comes up that would affect the Ashuelot, the local advisory committee will have chance to tell federal, state and local agencies what they think. Those issues could involve things as hydroelectric plants or flood-control dams.

Except for waste disposal, the program bans no land uses. Loosening laws are what control the

Disinterest, not opposition

So far, no opposition has been heard to nominating the Ashuelot for the program, according to Calhoun and Francis.

"Selectmen in towns along the river feel this may be of some use to Calhoun said, such as in protect water supplies.

"The only opposition we've heard is disinterest," Calhoun said.

The nomination of some of the river has been opposed by a group called the "Landowners' Alliance" which says the program makes too hard to develop hydroelectric facilities. Hydro, it says, will be increasingly important as electric rates climb.

Francis and Calhoun note that the protection program does eliminate hydro; it only spells where such facilities can go to meet standards to protect the river.

Getting started

For the past year, the Ashuelot River Nominating Committee has been studying everything about the river — its history, its plants, fish and wildlife; local living patterns; development trends and recreational uses.

To get even more information the committee plans meetings June in several towns along the river. It will also ask river property owners for information and the N.H. Department of Environmental Services will hold at least one formal hearing about nomination.

Eventually, the environmental department's commissioner will make a recommendation to the Legislature on accepting the river's nomination.

The nominating committee meets on the third Thursday of every month at the Keene Recreation Center, and Calhoun and Francis hope local residents will get involved in the effort. They say there are lots of ways to help. Another thing, the nominating committee always needs money.

Francis, the project's only full-time person, is being paid by the local-based Harris Center for Conservation Education, which provides office help. Francis worked on restoration efforts

Area lakes, streams may aid Boston

By MARK HAYWARD
Sentinel Staff Writer

Otter Brook and Surry Mountain dams are part of a plan to help quench the thirsty Boston area.

The Massachusetts water authority wants the U.S. Army Corps of Engineers, which owns the two Keene-area dams, to consider holding water in as many as nine dams in New Hampshire, Vermont and northern Massachusetts.

The water would then be released gradually during dry months when the Quabbin Reservoir in central Massachusetts is low. The Quabbin is a principal source of drinking water for 2½

million people in the Boston area.

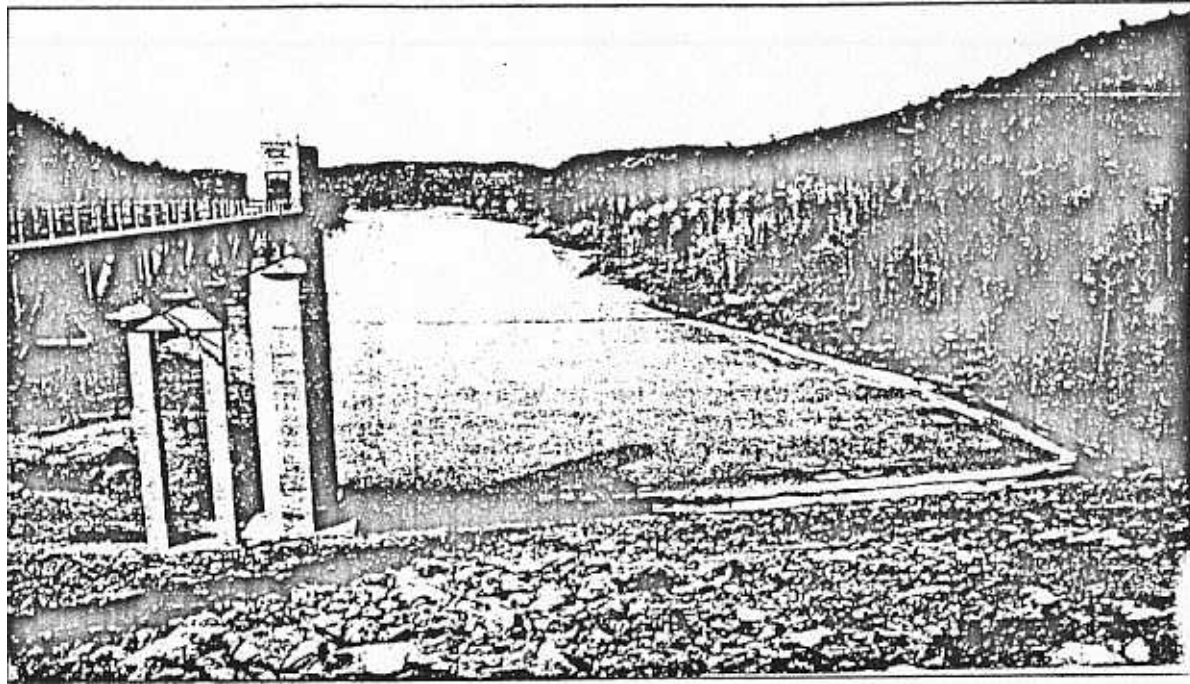
The proposal has some Monadnock Region residents upset.

"It's wake up time for the citizens around here," said John C. Calhoun, a local forester and member of the Ashuelot River Nominating Committee, which is concerned about Ashuelot issues.

"While we're asleep on the Ashuelot, other people are looking at ways to use the water there (in Boston)," he said.

He worries that Massachusetts could claim rights to waters such as the Ashuelot River, which feeds the Connecticut. Once they're lost,

(See OTTER BROOK/Page 13)



Sentinel photo by MICHAEL MOORE

WATER SOURCE — The Otter Brook Dam in Keene is one of several sites being considered to help the Quabbin Reservoir in central Massachusetts keep drinking water flowing to Boston.

(Continued from Page One)

they're gone for good, he said.

Officials in charge of supplying water to the Boston area, however, said the project won't go forward if environmental impacts are great. And the Massachusetts Water Resource Authority, which operates the Quabbin and provides water to Boston, said area lakes and streams will change little if the plan goes forward.

"This would not take water away from Vermont and New Hampshire," said Patricia B. Corcoran, a program manager for the authority.

The water behind the dams flows down rivers to the Connecticut anyway, she said. "It's not taking water away. It's releasing it

slower into the rivers."

Basically, it would mean "a little more water" behind the corps' flood control dams. Corcoran said, and "a very small change in the river flows."

The concept being studied doesn't call for Connecticut River water to actually feed the Quabbin Reservoir. But Boston water officials are trying to avoid a requirement that forces them to siphon the Quabbin into the Connecticut during the dry months of late summer and early fall.

During the dry months of late summer and early fall, river levels can drop to a level too shallow for boats, said Barbara R. Blumeris, a corps' project manager.

Then, operators of the Quabbin must dump more water than nor-

mal into the Connecticut.

Normally, the Quabbin empties 20 million gallons per day into the Connecticut. But when its level drops below a certain amount, that number must be increased to 45 million gallons a day.

Higher water levels would be built up behind nine corps flood control dams, and then released during dry months.

How much water would be stored in the dams and just what effect that would have on the size of recreation areas won't be made public until June, when results of the study are scheduled to be released.

The study involves five dams in Vermont. Surry and Otter Brook, which feed the Ashuelot River, and two in Massachusetts.

The \$130,000 Connecticut River

Flow Augmentation Study is only the first of many steps needed if the project goes forward, a corps official said.

"This is a first look at a possible scenario," Blumeris said. "A lot would have to be worked on until anything else is done."

The preliminary study — which began in July 1991 — is nearing completion, Blumeris said.

When finished, the report goes to various government agencies for review and is then made public, she said. The corps is doing the study for the Massachusetts authority and splitting the costs.

Researchers are looking at effects the plan would have on recreation, fishing and wildlife, hydrology and local economies, Blumeris said.

Editorial

River insurance

The Ashuelot River flows like a shaky "S" from the mouth of a pond in the town of Washington to the Connecticut River in Hinsdale. For 60 miles or so, it wanders through Lempster, Marlow, Gilesum, Surry, Keene, Swansey and Winchester, providing recreational opportunities and aesthetic pleasure to the people of the region, and a rich breeding ground to other species with which we share this corner of the state. The people of southwestern New Hampshire have every interest in keeping the Ashuelot healthy and flowing.

Not that it faces any imminent threat. But the river is, in the words of some environmentalists, "under stress." John Calhoun, a former chairman of the Connecticut River Watershed Council, says that means "it's fairly heavily used; there are some critters there that are obviously having some problems."

The best bet for protecting the river, and preserving it for future generations, is probably to have it accepted in the New Hampshire Rivers Program, a preservation mechanism the Legislature set up four years ago. The program works this way: Committees set up by concerned citizens and local officials nominate a particular river. If it's accepted by the Department of Environmental Services and subsequently the Legislature, it is then classified in segments according to recommended proper uses. For example, segments classified as "natural" cannot be used by motorboats or bridged by new or rebuilt dams. Segments classified as "community," are less restricted. But classification does not immediately involve land-use restrictions, except that landfills and hazardous waste plants built near the river must conform to siting restrictions.

Perhaps the most important benefit of classification is that it gives local people advance notice of projects that could affect the river. After a river is classified, a local advisory committee is set up, with the members nominated by the communities through which the river flows. With state assistance, and town meeting approval, the committee develops a management plan for the river.

The committees don't actually rule on development proposals, but protected rivers can't be diverted or altered in other ways unless the committees are notified. There can, in short, be no unpleasant surprises.

The Ashuelot River Nominating Committee, which volunteers formed about a year ago to prepare the river's nomination, is putting the finishing touches on its proposal, which could be decided as soon as next year. The committee and the Southwest Region Planning Commission are holding a series of public meetings to get public reaction to — and suggestions for — the Ashuelot River project. The first meeting is June 30 at the Winchester Town Hall. The other meetings are scheduled July 1 at the Keene Public Library and July 2 at Jones Hall in Marlow. All are at 7 p.m.

The committee needs lots of support — in writing — from official bodies in affected communities. It needs...

Public Meeting on Ashuelot River to be held in Marlow

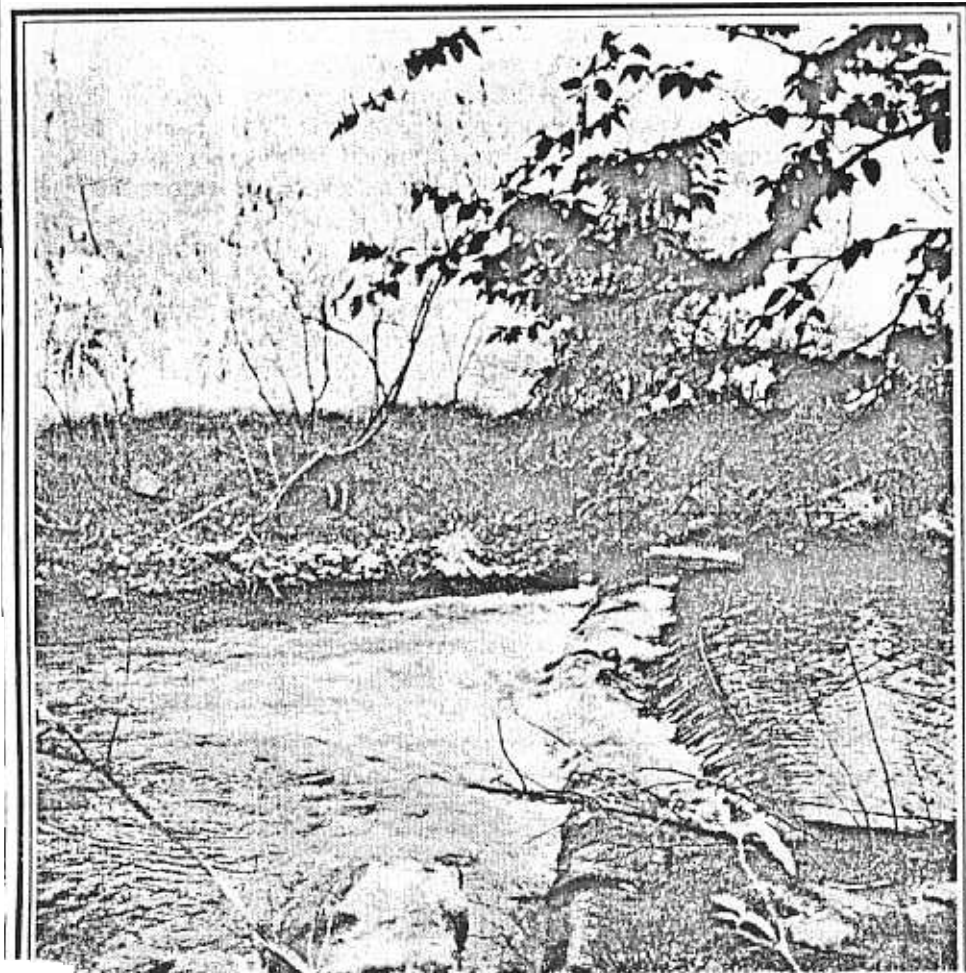
by Steven Lindsey
Times-Journal Correspondent

MARLOW — The Ashuelot River Nominating Committee will hold a series of public meetings concerning the future of the Ashuelot River. The group is trying to protect the river by nominating it as a State designated river.

A designated river is one nominated for

protection under the N.H. Rivers Management and Protection Program passed by the State Legislature in 1988. The purpose of the program is to protect the State's significant river resources through the joint efforts of state and local governments.

The program is administered by the Department of Environmental Services (DES) and is staffed by a State Rivers Coordinator and a River Corridor Planner.



A State Rivers Management Advisory Committee Composed of many river interests has been established to advise the DES on the implementation of the program.

A river can be nominated for this purpose by any N.H. citizens group. The Ashuelot River Nominating Committee, a group of about 25, is leading this effort.

The public hearings are held by the Ashuelot River Nominating Committee to encourage public input on their efforts to nominate the river for protection.

The protection of the river involves classifying different sections of the river, depending on the characteristics of that river section. The four river classifications afford the river various measures of protection.

The most comprehensive protection is offered by the Natural River Classification. This classification attempts to preserve a river in its natural state. It prohibits the construction of new dams, the reconstruction of old (breached) dams, channel alterations, motorized watercraft, and the locating of landfills or waste facilities near the river bank. The Nominating Committee wants to designate the Ashuelot River from outlet of Butterfield pond to the Falls above Ashuelot pond as Natural.

The second most comprehensive protection is the Rural Rivers Classification. It offers much of the same protection offered above in the Natural Rivers Classification except it allows channel alterations and motorized watercraft. It also accommodates sparsely settled areas along the river's banks. The Nominating Committee wants to designate the Ashuelot Rural from the Falls above Ashuelot pond to Marlow's Simonsville bridge, and from just downstream of PC Connection's Audio Assembly Dam to just upstream of Gilsum's Blackstock Dam. Neither dam will be af-

ected by this river designation effort. A third portion of the river the Committee would like to designate as Rural is the portion of river from Gilsum's stone arch bridge to the Court Street bridge in Keene.

The third river classification, Rural-Community, was not considered by the nominating committee for any portions of the Northern Ashuelot. It is a weaker measure of protection.

The last classification is the Community Classification. It allows the construction of dams; reconstruction of breached dams; channel alterations; motorized watercraft. It would prohibit the construction of waste facilities near river banks.

The Nominating Committee wishes to classify the portion of river from Marlow's Simonsville bridge to (and including) the PC Connection Dam; and the portion of river from the (and including) the Blackstone Dam to Gilsum's stone arch bridge.

The public meeting for the Nomination of the upper portion of the Ashuelot will be held on July 2, 7 pm, at Jones Hall, Marlow. For more information, call (603) 525-3394, 826-5865, or 352-0987. The public is encouraged to attend.

REGION / continued

Ashuelot River protection program gets support at hearing

If there's any opposition to enrolling the Ashuelot River in a state protection program, it hasn't surfaced yet.

A local committee nominating the Ashuelot into the N.H. Rivers Management and Protection Program heard nothing but support at a hearing Wednesday night in Keene.

More than 30 people attended Wednesday's hearing, the second of three it's holding this week. Some

attending live along the river; others were just interested.

And three people at the hearing will vote on the nomination when it reaches the N.H. Legislature next year.

"I think this is tremendous," said state Rep. Daniel M. Burnham, D-Dublin.

Burnham said he'll urge other legislators to support the nomination, but doesn't know if there'll be much opposition.

"Everybody I know of seems supportive," Burnham said.

Nine rivers are already in the state protection program, including the Contoocook and Connecticut Rivers.

Nominations for most of these rivers have typically been smooth until they reach the Legislature, where hydroelectric producers have sometimes complained about restrictions.

For the Connecticut River, the Legislature this spring arranged a compromise that pleased hydroelectric producers and the river's nominating committee. It designated some hydro dams — just the structures — as "community river" sections, which have the fewest re-

strictions of the program's four designations.

Under the program, sections of a river are given varying levels of protection, depending on those designations: natural, rural, rural community, or community. Natural designations must be at least 5 miles long and are the most restrictive; community sections are at least 1 mile and are the least restrictive.

The designations cover development and repair of dams; water quality and quantity; motorboat rules; and plans for waste disposal facilities — the only land protection measures in the program.

The Ashuelot River Nominating

Committee has proposed that 3 miles of the river's headwaters in Washington be designated as natural. The remaining sections are rural or community.

If the Ashuelot River is enrolled in the program, the Keene City Council and selectmen from the eight towns along it will appoint an Ashuelot River Advisory Committee. The committee will comment on any development proposals that involve the river and write a plan to manage it.

Among those who spoke in favor of the Ashuelot nomination were several landowners along the river; Alan Gross, chairman of the Monadnock Sierra Club; and Dean

E. Shankle Jr., Hinsdale's administrative assistant.

The committee will form to nominate the Ashuelot into the program on July 6 when it presents a proposal to the N.H. Department of Environmental Services.

Later in July, the N.H. River Management Advisory Commission will begin reviewing the nomination. If that committee approves the plan, it will ask the Legislature to enroll the Ashuelot into the program in next year's session.

The Ashuelot River Nominating Committee will hold its final meeting on the proposal tonight at Jones Hall in Marlow.

Keene Sentinel 7/1/92

River protection idea aired

What do local residents think about plans to protect the Ashuelot River?

The Ashuelot River Nominating Committee hopes to collect a lot of answers this week. It held a hearing on the idea Tuesday night in Winchester, and holds more hearings tonight at the Keene Public Library and on Thursday at Jones Hall in Marlow. The Keene and Marlow meetings start at 7 p.m.

The committee has proposed nominating the Ashuelot for the N.H. Rivers Management and Protection Program, and outlined what that would mean during Tuesday night's hearing in Winchester.

None of the 15 people who listened had any objections, said Sharon F. Francis of Charlestown, who chairs the nominating committee.

The 60-mile Ashuelot starts in Washington, north of Stoddard, and flows through nine communities before entering the Connecticut River in Hinsdale.

The state program would help to ensure the quality and quantity of water in the Ashuelot, and would allow the N.H. Department of Environmental Services to scrutinize proposals for dams and trash facilities more closely than it can now.

So far, three local rivers — the Connecticut River, the Contoocook, and a Contoocook tributary, the North Branch — have been adopted in the management program. Adoption requires a vote by the N.H. Legislature.

The Ashuelot River Nominating Committee holds hearings on its plans tonight at 7 p.m. at the Keene Public Library, 60 Winter St., and Thursday at 7 at Jones Hall in Marlow.